

WALINGA INC - EAP

April 15, 2016 (*Updated and detailed May 26, 2016*)

Director

Environmental Approvals Branch

Manitoba Conservation and Water Stewardship
Suite 160, 123 Main St, Box 80
Winnipeg, Manitoba. R3C 1A5



Re: Environmental Act Proposal Form

Dear Tracey Braun,

In follow up to a planned upgrade to our manufacturing facility in Carman Manitoba, we hereby submit an application for an environmental license under the Environment Act. We had contracted Accutech Engineering to design a new hard coating line for our shop, and to take it to the next step we were advised to pursue this application. Based on my phone and e-mail conversations with various officials I have most recently been communicating with Eshetu Beshada who has helped me get this launched.

Based on a review under the Classes of Development Regulation MR 164/88, it appears that Walinga Inc. is now considered a Class 2 Development. (Per: E-mail from Eshetu Bashada on March 18, 2016.)

This package will include: **Detailed updates supplied and attached.**

- 1) The Environmental Act Proposal Form.
- 2) Executive Summary and related documentation.
- 3) A cheque in the amount of \$7,500.00 payable to the Minister of Finance for the Class 2 fee.
- 4) One USB Flashdrive containing the electronic copies of the Walinga Inc. EAP.
- 5) And 4 hard copies of the Walinga Inc. EAP. *(E-mail copy to be sent as well.)*

We have made all efforts to provide a full and complete package of information on Walinga inc. as it relates to this EAP. Should there be something missing or you need more detail on the various items, please contact me at the e-mail or phone numbers below.

Sincerely and with kind regards,

Cor Lodder (Director – Carman Machining Division)

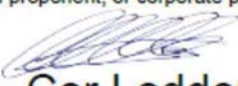
WALINGA INC.

Box 1790, 70 3rd Ave NE
Carman, Manitoba. R0G 0J0
Phone # 204-745-2951 (x428), Mobile # 204-745-0493
www.walinga.com



Environment Act Proposal Form



Name of the development: Walinga Inc.	
Type of development per Classes of Development Regulation (Manitoba Regulation 164/88): Class 1 - manufacturing and industrial plant	
Legal name of the applicant: Walinga Inc.	
Mailing address of the applicant: Box 1790, 70 3rd Ave NE. Carman, MB. R0G 0J0	
Contact Person: Cor Lodder	
City: Carman	Province: Manitoba Postal Code: R0G 0J0
Phone Number: 204-745-2951	Fax: 204-745-6309 email: cor.lodder@walinga.
Location of the development: 70 3rd Ave NE. Carman, MB. R0G 0J0	
Contact Person: Cor Lodder	
Street Address: 70 3rd Ave NE	
Legal Description: Block 3, Lot 1, Plan 26648	
City/Town: Carman	Province: Manitoba Postal Code: R0G 0J0
Phone Number: 204-745-2951	Fax: 204-745-6309 email: cor.lodder@walinga
Name of proponent contact person for purposes of the environmental assessment: Cor Lodder (Director - Carman Machining Division)	
Phone: 204-745-2951	Mailing address: Box 1790, 70 3rd Ave. NE Carman, Manitoba. R0G 0J0
Fax:	
Email address: cor.lodder@walinga.com	
Webpage address: www.walinga.com	
Date: March 15, 2016	Signature of proponent, or corporate principal of corporate proponent:  Printed name: Cor Lodder



Introduction and Background

Walinga Inc. was established in 1954 as a family enterprise, building truck bodies for anyone who needed to haul goods. Over the years the company found their niche in manufacturing custom-built truck bodies and trailers for the bulk feed industry. In 2014 we celebrated 60 years of growth and progress that has taken us from a local manufacturer serving southern Ontario to a second and third generation family business that ships product to some 47 countries around the world. Walinga has been engineering and manufacturing Bulk Transportation Equipment and Pneumatic Conveying Systems for many different markets that include Bulk Feed, Agricultural, Rendering, Plastics, Bio-Energy, and other specialty products. Our head office and main manufacturing plant is based just outside of Guelph Ontario. This plant is focused on the manufacture of our transportation equipment, while our plant in Fergus Ontario builds the pneumatic conveying systems. The Carman Manitoba facility is home to our machining division, and supports the servicing of our equipment sold on the Prairies. We established a Manitoba presence in 1989 with a small sales and service shop being built in 1990. Then in 1996 we moved our machining division from Guelph Ontario to Carman, as part of our corporate growth plan and to bring some of our business activity closer to our western Canadian Customers and to be closer to some of our raw material suppliers.

The machining division supports the manufacture of our blowers, airlocks, and related parts used in the manufacture of all our product lines. This operation involves the machining of steel, cast iron, and cast aluminum. A unique part of our product line is that we Hard Chrome plate some of the internal components for our blowers and airlocks to give them extra wear life for our customers in the field. Over the past 15 years we have been researching “Hard Chrome Alternatives” (HCA) in our efforts to find a more environmentally responsible and health & wellness friendly process and product. As many in the industry will tell you, Industrial Hard Chrome is very hard to beat from an abrasive wear resistance, performance perspective. We have since found a process that will provide the environmental and health benefits and still give us the product performance that we need to maintain leadership in our markets around the world. More information will detail that process and system later in this report and package. *You will note the two terms used throughout this report: “Hard Coating” and “CORVOR” which make reference to one and the same process. The term or name “CORVOR” is at this point our proprietary trade or product name for this new process. This name is in the process of being registered as a Walinga trademark.* This new process is proprietary in substance and nature, having been developed by a US company by the name of General Magnaplate Corp who own the rights to this unique and leading edge technology. <http://www.magnaplate.com/> Walinga has signed technology transfer and confidentiality agreements with them, and have undertaken to bring it into our manufacturing system first and foremost for the benefit of our own products. It will give us as a Canadian and Manitoba company, a leading edge in the industry, with opportunity to grow our business and add jobs. All the while seeing an improvement in improving the health & wellness environment for our employees, the surrounding community, and developing green manufacturing processes and world class products.

The Walinga operation in Carman also employs a truck body and trailer service shop for the service and repair of Walinga products that include the Feed & Rendering Transportation equipment, Pneumatic Conveying systems, and other agricultural equipment for the local farmers and dealers. We also support the Town and RM in doing service work and repairs on their infrastructure equipment.

After a two-year process, following a successful audit in September of 2015, Walinga could realize their goal of **ISO 9001:2008 certification** on October 2, 2015. The project was managed by BDC and then for auditing and certification we contracted CWB – QUASAR. Implementing the Quality Management System has helped us to identify opportunities for improvement. Walinga also intends to explore the possibility of ISO 14001 certification in order to build on our Environmental commitment. This standard sets out the criteria for an environmental management system. It maps out a framework that a company or organization can follow to set up an effective environmental management system. It can be used by any organization regardless of its activity or sector. (Ref: ISO9001:2008 Certificate attached.)

Walinga Inc. in Carman employs 47 full time people, and overall our company employs around 250 in all Canadian locations.

Description of Development

Our Carman operations are in 3 main buildings plus a warehouse on 3rd Ave NE, in the Industrial Park. The first and original building is at 70 3rd Ave NE

- Dimensions: 50ft x 120ft (15.24m x 36.58m) or 6000 sqft (557.5 sqm).

The second building is at 80 3rd Ave NE

- Dimensions: 50ft x 120ft (15.24m x 36.58m) or 6000 sqft (557.5 sqm).

There is a cold storage warehouse building at 80 3rd Ave NE

- Dimensions: 40ft x 96ft (12.19m x 29.26m) or 3840 sqft (356.7 sqm).

The third building is across the street at 81 3rd Ave NE

- Dimensions: 80ft x 125ft (24.38m x 38.10m) with a 2 story office and inventory area of 16ft x 60ft (4.88m x 18.29m) or a total of 11,920 sqft (1107.39 sqm).

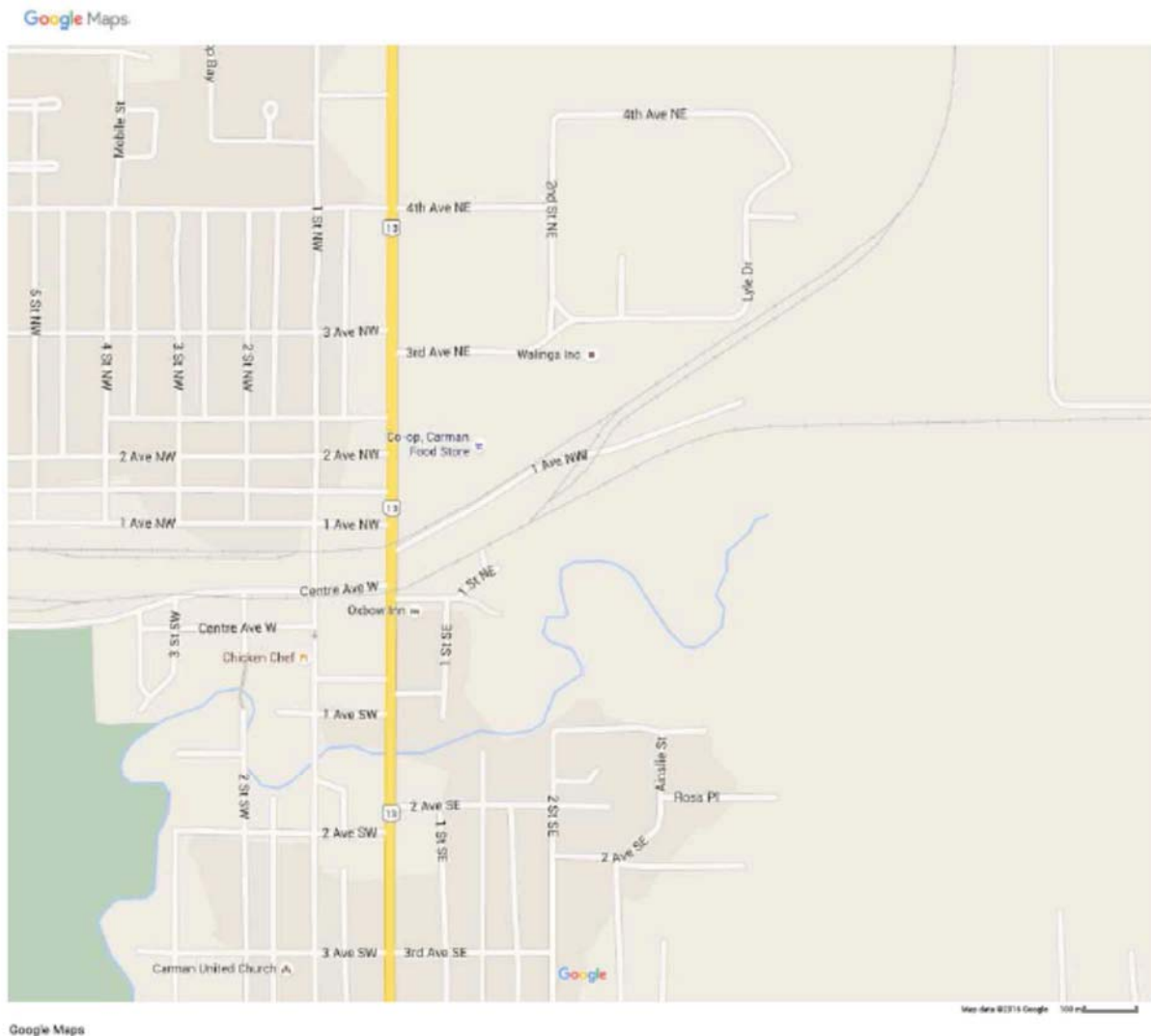
The properties (land and buildings) are all owned by Jan Tjerks Realty Inc. as described on the chart following. The actual land titles have since been received (*from the Morden Land Titles Office*) and will be included as an addendum with this package.

Property Owner: Jan Tjerks Realty Inc.						Tenant: Walinga Inc.		
Address for both: PO Box 1790, 70 3rd Ave NE. Carman MB. R0G 0J0								
Phone: 204-745-2951 Fax: 204-745-6309 E-Mail: cor.lodder@walinga.com								
Municipality #	Roll #	Lot Section	Block Twp	Plan Range	Title or Deed	Civic Address	Land Area	
							Acres	Hectares
409	4560	1	3	26648	2298562	70 3 rd Ave NE (Original Assy Shop)	2.12	0.859
409	4565	2	3	26648	2298563	80 3 rd Ave NE (Machine Shop)	1.53	0.620
409	4570	3	3	26648	2298564	90 3 rd Ave NE (East of Machine Shop)	1.33	0.539
409	4520	1, 2, 3	2	26648	2710173, 2710174, 2710175	45 2 nd St NE (New 3 Acre Property)	3	1.215
409	4535	4	2	26648	2293908	81 3 rd Ave NE (Service Shop)	1	0.405
409	4540	5	2	26648	2293910	85 3 rd Ave NE (SS Lots East)	1	0.405
409	4545	6	2	26648	2293911	89 3 rd Ave NE (SS Lots East)	1	0.405
409	4550	7	2	26648	2293913	93 3 rd Ave NE (SS Lots East)	1	0.405
409	4555	8	2	26648	2293914	97 3 rd Ave NE (SS Lots East)	1	0.405
Total Land Area =							12.98	5.2569

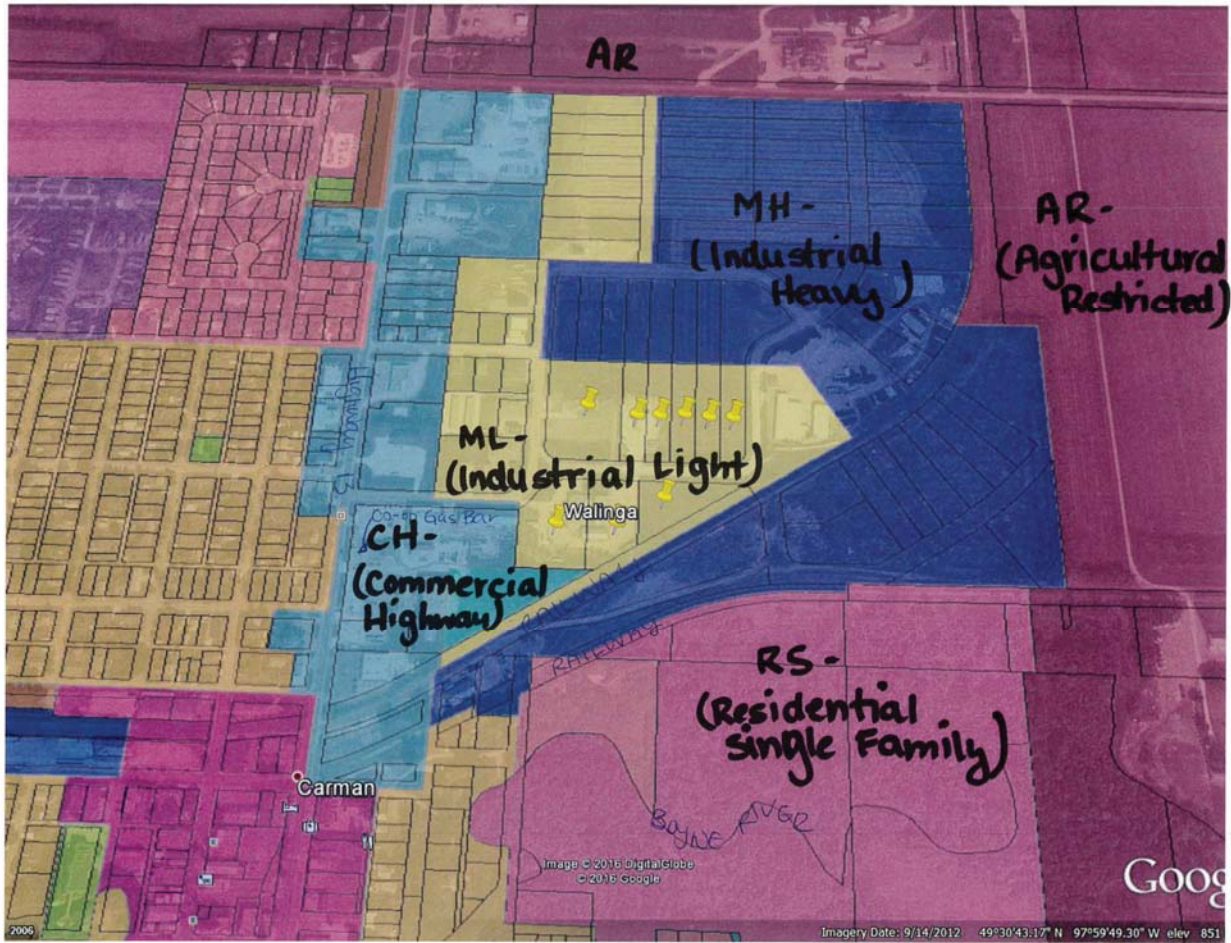


Description of existing environment in the project area

The Industrial Park area that our shops are located is zone ML and can be seen on the maps attached as supplied by the Town of Carman planning office. Our property and shops are located along a railway spur, with the Town of Carman Public Works yard across the tracks. Beyond that is a wooded area with the Boyne River basin running 185 meters from the nearest oxbow. Also enclosed are various documents that outline the history of the industrial park area and the environmental assessments that have been completed over the past few years. (Ref: Town of Carman letter dated March 15, 2016 and Pinchin Environmental Report – attached.)



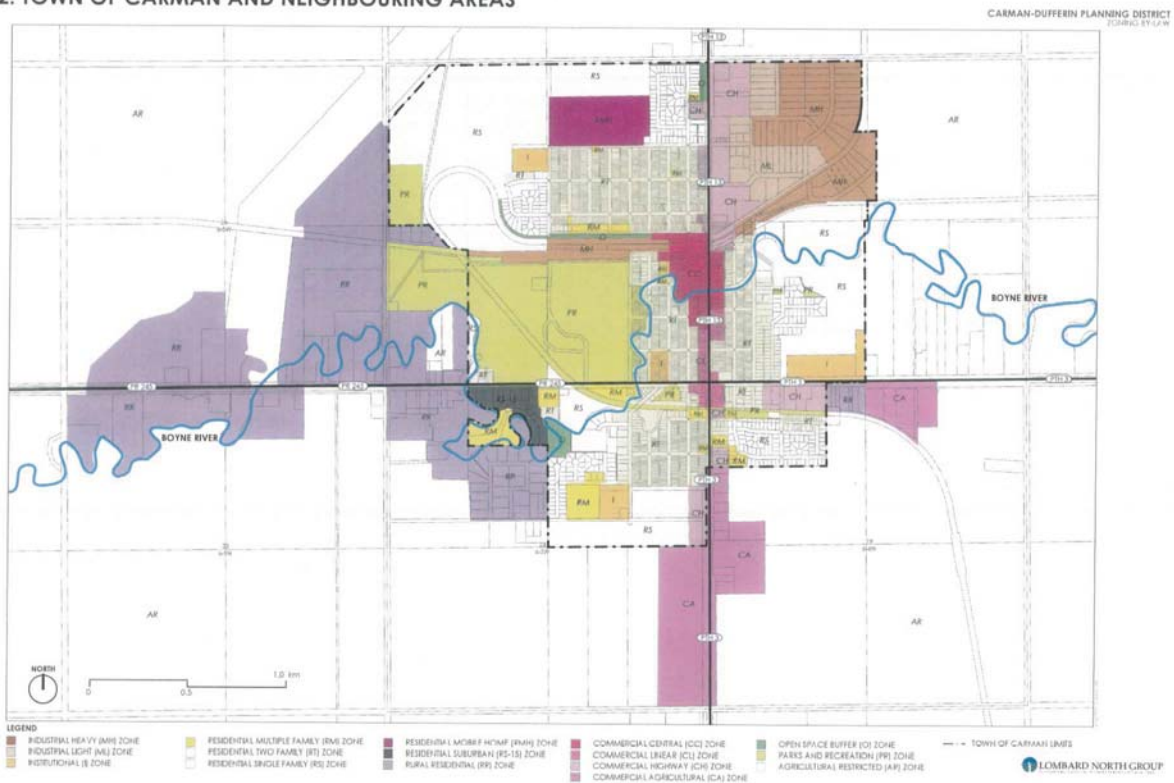
- 1) **Pinchin Environmental** did a Phase 1 Environmental Site Assessment (ESA) on the 3 lots (at 45 2nd St NE) which is adjacent to the service shop. This was done in December 2013 in preparation for and as a condition for us to purchase the property from the owner. See attached.
- 2) **Pinchin Environmental** also did a Phase 1 Environmental Site Assessment (ESA) on the rest of our properties (at 70 3rd Ave NE and across the street at 81 3rd Ave NE). This was done in March of 2012 by request of BDC in preparation for and as a condition for capital financing company-wide for some expansion plans we undertook in Guelph Ontario and here in Carman Manitoba. See attached.
- 3) **Winnipeg Air Testing** – We commissioned an Air Quality and Noise Level Testing for Tuesday March 29th. See report dated April 6, 2016 below for immediate reference. It will be included in original form as an addendum for more detailed reading and review.
- 4) **The Town of Carman** has a waste water lagoon about 500 meters to the east of our Industrial Park.
- 5) **Waste Disposal** – our general waste disposal is handled by the Town of Carman – Public Works crew. As well, there is a dumpster bin placed here and emptied bi-weekly by PVC (Pembina Valley Containers) of Morden.
- 6) **Recycling** is also picked up weekly by the Town of Carman – Public Works crew.
- 7) **Metal Scrap** is placed in roll-off bins and taken for recycling by Urban Mine of Winnipeg. Scrap iron castings are hauled by PVC to Integra Castings in Winkler for re-melting (recycling).



Zoning categories for the Carman Industrial Park and surrounding areas. As provided by the Carman – Dufferin planning District.



MAP 2. TOWN OF CARMAN AND NEIGHBOURING AREAS





Aerial photo of the Walinga Carman properties – taken September 27, 2014.

The neighbouring businesses around the Industrial Park include:


- 1) Carman Co-op Hardware store and Lumber yard.
- 2) MAFRI - Manitoba Agriculture-Food and Rural Initiatives – office.
- 3) Carman Community Health Services.
- 4) Manitoba Corn Growers Association.
- 5) Vanderveen Commodities.
- 6) SC Building Systems.
- 7) Cliff's Concrete.
- 8) Ideal Pipe.

As can be seen on the maps included, the Walinga properties are somewhat in the middle of the ML zoned areas and surrounded by MH and CH.

Description of proposed development

The following letter attached - from Accutech Engineering Inc. (dated March 14, 2016) outlines the system purpose, tank and ventilation design. The actual and full file sized engineering drawings and technical information will be attached as well.

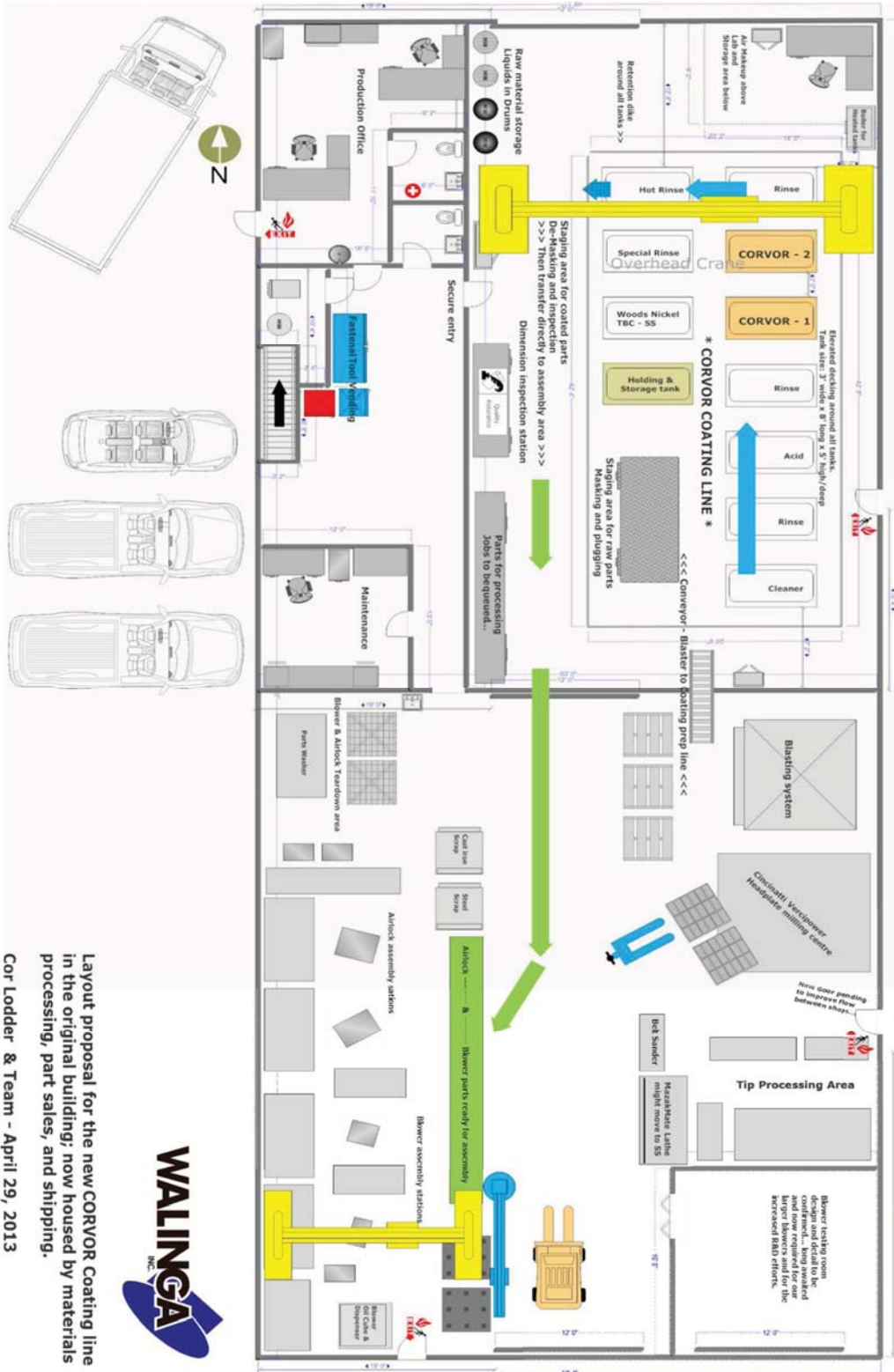
The following page provides a sample imaging (for package reference only) of the formal engineered drawings. The originals will be included with the hard copy and electronic filing.

SEAL	PERMIT TO PRACTICE		
			
CLIENT	WALINGA INC. 70 3RD AVENUE N.E. CARMAN, MANITOBA		
PROJECT	TANK VENTILATION		
SHEET TITLE	MECHANICAL SITE PLAN		
DRAWN BY NIB	CHECKED BY BKW	SCALE AS NOTED	SHEET NO M001
DESIGNED BY DAN	JOB NUMBER 64002	DATE JAN 08 2016	REVISION NO 0

PLOT DATE: January-15-16 4:56:04 PM



This image provides the proposed shop floor layout plan for the Hard Coating line.



Layout proposal for the new CORVOR Coating line in the original building; now housed by materials processing, part sales, and shipping.
 Cor Lodder & Team - April 29, 2013



Description of Environmental effects of the proposed Development

Listed below is a spreadsheet listing of all chemicals, lubricants/coolants, and oils we use in our equipment and in the various manufacturing processes. The MSDS and WHMIS references will be made, along with MSDS sheets attached or available online.

Walinga Inc Carman - Chemical and Oil products - Purchases/Usage per year.				
Industry/Manufacturer Description	Walinga Part Number	Industry/Manufacturer Classification Number	Supplier	Annual Usage Quantity
Adhesives:				
Loctite Retaining Compound, 638, Gr	92-101519-6	Not rated	Fastenal	1
Loctite 406 Surface Insensitive Adhesive		Not rated	Fastenal	1
Scotch-Weld Adhesive	92-19177-6	Not rated	Fastenal	1
CSL 535 Clear Silicone	92-14772-6	D2A, D2B	Webco Sealants Ltd.	50
Chroming:				
Heef 25RS Chromic Acid, Solid, 50kg	32-06500-6	D1B	Atotech Canada Ltd.	1000kg
Barium Carbonate	32-17573-6	C, D1A, D2A, D2B, E	County Services Co.	25kg
Cleaners:				
Handmaster Citrus Hand Cleaner (Jug)		2B	Canadian Linen	50
Dujel 200 (209L)		Not rated	Dubois Chemicals	2
Dujel 1200 Gel (208L)		Not rated	Dubois Chemicals	1
So-Brite Plus (208L)		Not rated	Dubois Chemicals	1
Rust Prevent Syn 3-X (208L)		Not rated	Dubois Chemicals	1
Secure Stream FRP (205L)		Not rated	Dubois Chemicals	1
Simple Green Cleaner/Citrisolve (4L)	32-15264-6	Not rated	Fastenal	8
MS T&T Cleaner (230kg)		Not rated	Schippers Canada	1
Pow erhouse Cleaner		E	Sw ish Maintenance	60
Quato 15 Disinfectant		E	Sw ish Maintenance	1
Sparkle Glass Cleaner		A, D2A, D2B	Sw ish Maintenance	36
Toilet Bowl Cleaner		D1A, E	Sw ish Maintenance	12
TCI 1202 HD Metal Cleaner	85-15266-6	D2, E	Tetra-Chem Industries	100kg
TCI 1211 Cleaner	85-18709-6	D2	Tetra-Chem Industries	200kg
Lubricants:				
Tonna S2M68 (18.9L)		Not rated	Carm Auto Ag Parts	1
Air Tool Oil	98-04324-6	Not rated	Fastenal	1 Gal
Anti-Seize, Loctite, Marine Grade	98-78345-6	Not rated	Fastenal	1
Linomax Grease (17oz)	37-97395-6	Not rated	Moore Industrial	10
Silver Streak (5/8oz)	98-17473-6	Not rated	Parker Hannifin Canada	30
Blow er Oil, Synthetic, Synduro SHB460	98-19152-6	Not rated	Petro Canada	2800L
Precision XL, EP2 Grease	98-14436-6	Not rated	Petro Canada	100kg
Accuflo Way Lube, TK-68	98-15026-6	Not rated	Petro Canada	200L
Oil, Traxon E Synthetic CD-50	98-17669-6	Not rated	Petro Canada	80L
Hyd Oil, Hydrex XV, All Season	98-17740-6	Not rated	Petro Canada	3800L
Turbo Flo R&O 32 (20L)		Not rated	Petro Canada	2
Hydrex AW32 (20L)		Not rated	Petro Canada	6
Hydrex AW46 (20L)		Not rated	Petro Canada	1
Hydrex AW22 (205L)		Not rated	Petro Canada	1
Fluid Film, 1 Gal Can	98-18726-6	A, B5	Piston Ring	2
Gear Lube Oil (1L)	98-01315-6	Not rated	Piston Ring	25L
Shell S32 (5 Gal)		Not rated	United Grinding	1

Continued...



Walinga Inc Carman - Chemical and Oil products - Purchases/Usage per year.				
Industry/Manufacturer Description	Walinga Part Number	Industry/Manufacturer Classification Number	Supplier	Annual Usage Quantity
Coolants:				
CommCool 8800 (204L)		D2B	Moore Industrial	1
CommCool HD (205L)		D2B	Moore Industrial	2
Hysol MB50 (200L)	(Shop floor testing)	D2A, D2B	Moore Industrial	2
Hydrosol 5035 (208L)	(Shop floor testing)	D2B	Westchem Technologies	2
Welding:				
Blueshield 6		D2A, D2B	Air Liquide	22
Spatter Release Gel (16oz)	32-03656-6	Not rated	Air Liquide	2
Weld Wire, Alum	32-04614-6	D2B	Air Liquide	300lbs
Weld Wire, Steel, S6	32-04856-6	Not rated	Air Liquide	400kg
Weld Wire, SS	32-07094-6	D2A, D2B	Air Liquide	30lbs
Weld Wire, Steel, LA-C6	32-94131-6	D2A, D2B	Air Liquide	1200kg
Acetylene	Cylinder	B1	Praxair Canada Inc.	7
Argon	Cylinder (9)	A	Praxair Canada Inc.	8
Oxygen	Cylinder	A, C	Praxair Canada Inc.	11
Stargon SS	Cylinder (10)	A	Praxair Canada Inc.	7
Misc:				
Optisorb Absorbent (bag)	32-08874-6	D2A	Fastenal	50
Butane (5.5oz)	32-88740-6	A, B1	Fastenal	3
Solder (400g)	32-01453-6	Not rated	Fastenal	3
Odourized Natural Gas		A, B1	Manitoba Hydro	
Windshield Washer Fluid		B2, D1B, D2A, D2B	Westrans Ltd.	10

Description of the Human Health effects of the proposed Development

Based on standard operating as well as Health & Safety procedures, Walinga Inc. maintains an active Health & Safety Committee with close attention to all employees being well equipped with the applicable Training and PPE for the work performed. With due diligence and a close-knit team we are thankful to have recently celebrated 1800 work days of No Lost Time Injuries (over 7 years!). Our continuous improvement efforts include the goal to reach beyond our ISO9001 and prepare ourselves for ISO14001, thereby strengthening our environmental management systems.

(Below is a portion from our Health & Safety policy book...)

**Walinga Inc.
Health and Safety Program**

Scope:

The aim of a Safety Policy and Safety Rules is to prevent personal injury and disruption of the plant's operation. The responsibility of achieving this goal rests equally with management and employees. "SAFETY IS THE CONCERN OF EVERYONE".

Management takes the responsibility to provide as safe an environment, equipment and tools as possible and the employees have the responsibility to maintain the safety of the environment, equipment and tools by following the rules and using good and proper safety practices.

It is the responsibility of everyone to be aware and alert at all times and to use good basic common sense.



Mitigation Measures to protect the Environment & Human Health & residual Environmental effects

Waste Generation and Management – reports, listing, Waste Handling companies, and manifests. See chart below, and a sampling of manifests included. We are currently in discussions with Miller Environmental on a proposals to consolidate all our hazardous waste disposal with them as one source for improved tracking and controls etc.

Physical State	TDG Shipping Name	Company	UN Number	TDG Class	Packing Group	Provincial Waste Class Code
L	Paint Related Material	United Chemicals	1263	3	II	N/A
L	Flammable Liquid, N.O.S. (Acetone)	United Chemicals	1993	3	II	N/A
L	Waste Flammable Liquid N.O.S. (Mineral Spirits)	GFL	1993	3	III	N/A
L	Waste not regulated by TDG (Coolant)	Clean Harbors	-	-	-	-
S	Waste Corrosive Solid N.O.S. (Chromic Acid Debris)	Miller Environmental	1759	8	II	112C

(Below is a portion from our Health & Safety policy book...)

PERSONAL PROTECTIVE EQUIPMENT (PPE)

POLICY

The use of the following PPE is mandatory when in employment of Walinga Inc., at any of its workplace or on service calls.

- 1) Safety Shoes - grade A CSA Certified
- 2) Hearing Protection
- 3) Safety Glasses

Additional PPE where required is as follows:

Material Handling

- rubber gloves

Welding

- welding helmets
- welding gloves
- face shields
- leather jacket, sleeves and aprons - to be issued on request

Paint Shop

- sand paper gloves
- latex gloves
- disposable coveralls
- respirators - suitable for paint/solvent fumes

Plating Dept.

- vinyl/rubber gloves
- safety face shield
- respirator
 - a) acid fumes and mist
 - b) lead fumes

Metal Fabricating

- face shields/goggles - grinding operations

General

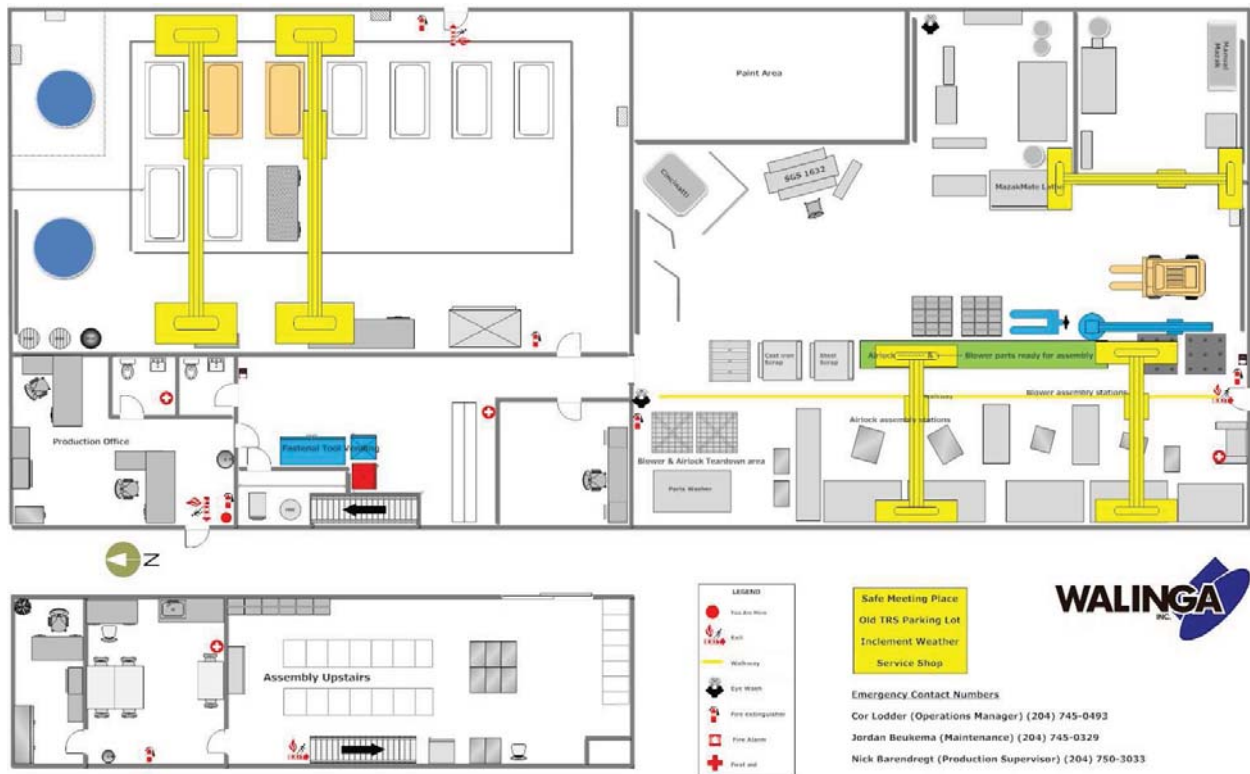
- Walinga Inc. will supply PPE where engineering controls are not practical or sufficient.



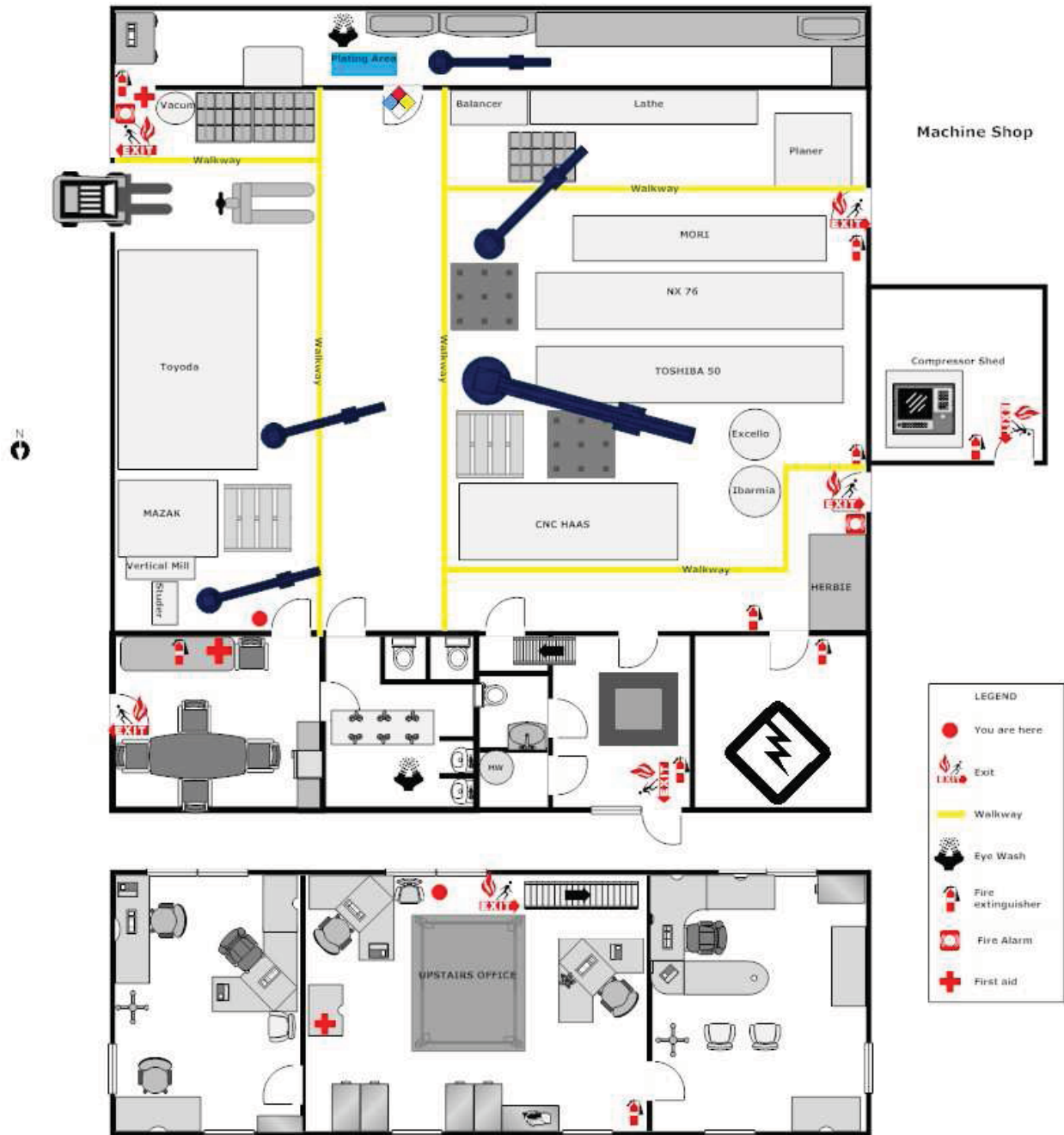
Follow-up plans, including monitoring & reporting

The layouts and site maps provide locations and contact info to employees on the shop floor as to locations of all Health & Safety, and Environmental points. Our Health & Safety Policy is kept up to date and reviewed with new and current employees on a regular basis. The policy includes an Emergency response plan with trained personnel on staff. We are blessed with no fewer than 4 of our employees being active members of the Carman–Dufferin Volunteer Fire Department. Training programs are held on various subjects throughout the year, along with First-Aid upgrade training. The Health & Safety Committee meets on a bi-monthly basis with minutes issued. They are posted in the plant, forwarded on to our other plants, and to our Workplace Health & Safety – Ministry Rep.

Floor plan – Assembly shop:



Floor plan – Machine shop:

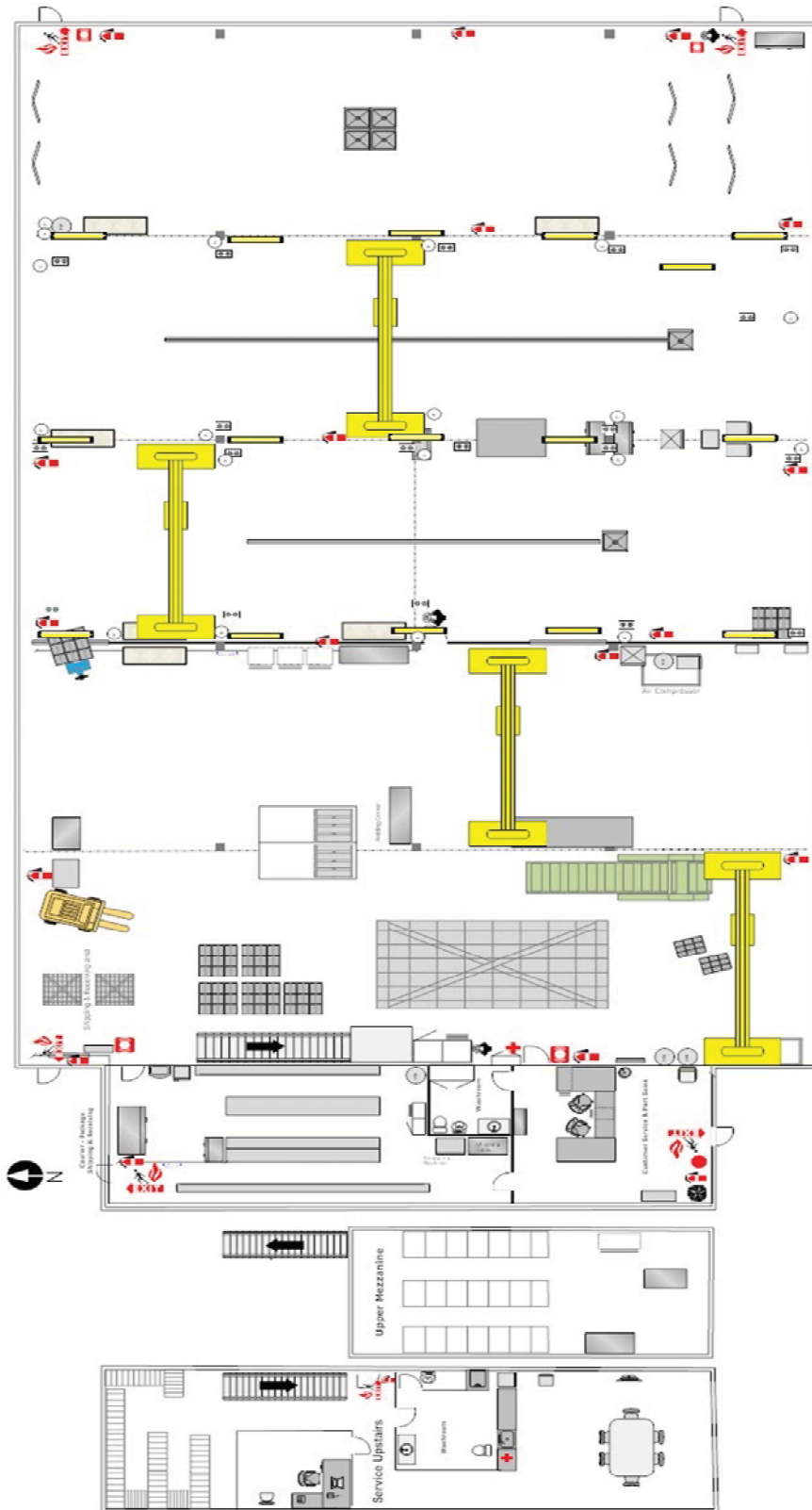


Safe Meeting Place
 Old TRS Parking Lot
 Inclement Weather
 Service Shop

Emergency Contact Numbers
 Cor Lodder (Operations Manager) (204) 745-0493
 Jordan Beukema (Maintenance) (204) 745-0329
 Nick Barendregt (Production Supervisor) (204) 750-3033



Floor plan – Service shop:



Emergency Contact Numbers
 Cor Lodder (Operations Manager) (204) 745-0493
 Jordan Beukema (Maintenance) (204) 745-0329
 Nick Barendregt (Production Supervisor) (204) 750-3033

Safe Meeting Place
 Old TRS Parking Lot
 Inclement Weather
 Machine Shop

LEGEND

- You Are Here
- EXIT
- Walkway
- Eye Wash
- Fire extinguisher
- First aid
- Fire Alarm



Funding – if applicable:

Walinga Inc. has not undertaken to pursue any funding for this particular project. We do have some programs in place with BDC for capital equipment and expansion projects that have since been completed at various locations in Ontario and Michigan.

Other federal, provincial or municipal approvals, licenses, permits, or authorizations, etc.

To my knowledge we do not have anything else under review at this time.

Also, no public consultations for this new project except with the manufacturers and suppliers of the new process. We decided to undertake this new process in the interest of improving the Health and Wellness environment for our employees, and to ensure continuous improvement in our efforts of a brighter and cleaner world.

Conclusions

I trust that the information included in this EAP is complete and fulfills the requirements to receive approvals and permits going forward. If there is anything else you need, please contact the undersigned or one of our team that can provide details and various areas.

Contact info and persons at Walinga Inc. in Carman:

Office phone # 204-745-2951

Office fax # 204-745-6309

Cor Lodder – Director

Chad Yeo – Health & Safety Coordinator

John Veenendaal – Purchasing & Materials Management

Talia Hillmer – Purchasing Assistant

Email addresses:

cor.lodder@walinga.com

chad.yeo@walinga.com

john.veenendaal@walinga.com

talia.hillmer@walinga.com

Sincerely,



Cor Lodder (Director – Carman Machining Division)

WALINGA INC.

Box 1790, 70 3rd Ave NE

Carman, Manitoba. R0G 0J0

Phone # 204-745-2951 (x428), Mobile # 204-745-0493

www.walinga.com





Carman-Dufferin Planning District

Box 160, 12 2nd Avenue SW

Carman MB R0G 0J0

(204) 745-2675

March 15, 2016

Environmental Approvals
160-123 Main Street
Winnipeg, MB R3C 1A5

The purpose of this letter is to provide additional information for the application by Walinga Inc. to your branch.

Attached is information regarding the zoning of the property Walinga Inc. operates on (shown with pins) and the zoning of properties located adjacent to the property. The area subject to the application is zoned ML (Industrial Light) and the operation is a permitted use. Land adjacent to the property is zoned ML, MH (Industrial Heavy) and CH (Commercial Highway).

Walinga Inc. has operated in the Carman Industrial Park for over 26 years and has grown into one of the largest employers in the community.

If you have questions regarding the information please feel free to contact our office at 204-745-2675.

Sincerely

A handwritten signature in black ink, appearing to read "Tyler King", is written over a horizontal line.

Tyler King
Secretary-Treasurer & Economic Development Officer



Practical Health and Safety Solutions
121 Keedian Drive, East St. Paul, MB R2E 0K3
Phone (204) 668-3141 Fax (204) 654-9583
Email: doug@winnipegairtesting.com

Cor Lodder
Walinga Inc.
3rd Ave. NE
Carman, MB R0G 0J0
Cor.lodder@walinga.com

April 8, 2016
Project Number: 2681

**RE: ENVIRONMENTAL SURVEY
WALINGA, 3RD AVE. NE, CARMAN, MB**

Dear Client:

Please find below the results of the survey performed on March 29, 2016, at Walinga in Carman, MB.

Background

As part of an ongoing health and safety program, air testing for metals, dust, VOCs, and hydrogen chloride as well as noise testing was performed to evaluate the environmental levels inside and around the facility.

Methodology

Air samples were collected using normal industrial hygiene sampling pumps. The sampling pumps were calibrated both before and after the survey to ensure a reliable flowrate. The flowrates, sample times and analysis methods are summarized below.

Sample Type	Flow rate	Method	Time Sampled
Metals	3.0 LPM	NIOSH 7300 & 7600 (Cr VI)	5 to 6 Hours (300 to 360 Minutes)
Hydrogen Chloride	0.3 LPM	NIOSH 7903	
Total Dust	3.0	NIOSH 0500	
VOC	0.2 LPM	VOC Survey	60 to 90 minutes
Paint	0.3 LPM	NIOSH 1450 for n-Butyl Acetate	
		NIOSH 1500 for Total Hydrocarbons as Hexane	

One metal sample, the Machine Shop area, was analyzed for a 14 metal scan. There was no welding taking place in the Machine shop so the sample was analyzed for a 14 metal scan in order to find any metals that may be present at higher concentrations.

Experience has shown that manganese is the “weak link” of welding fume in that it represents the vast majority of the exposure. Therefore the welding shop samples were analyzed for manganese only.

Observations

Walinga is a manufacturer of transport equipment. They perform several processes including welding, chrome plating, and painting. The day of testing was reported to be a normal workday. Sampling for hexavalent chromium was performed at the point of exhaust over the chrome plating tank. The chrome plating tank has an exhaust system which visually captures most of not all of the emission from the tank. Sampling was performed during the charging of the tank when potential emissions should be highest. The sampling equipment was positioned at the back of the tank in the plane of the entry into the exhaust system so as to be representative of the concentration coming out of the exhaust port to the outside environment. There is a tank of hydrochloric acid used to acid strip parts. There is a small local exhaust system for the tank. Sampling for hydrogen chloride was performed at the point of exhaust over the acid stripping tank so as to be representative of the concentration emitted to the environment.

Noise measurements were taken at points around the outside of the facility. It was reported that at the end of the work day, about 5:00 pm, all processes and ventilation equipment is shut down. This includes the air exhaust units outside the building that were the most significant contributors to the noise level produced during the day by the facility.

Noise Measurements

Noise measurements were collected with a Cirrus brand sound level meter (model CR:306) at various locations on the property surrounding both of Walinga’s buildings. Significant noise sources from Walinga were air compressors and air handling units. It was reported that these units are turned off at the end of the workday and do not produce noise during the evening or at night.



The noise level standing next to the central vac system was 70 dBA while it was running. This machine ran intermittently throughout the day. The noise level at the edge of the property was 61 dBA while it was running and 51 – 53 dBA when it was off.

The noise level at the dual exhaust fans was 70 – 71 dBA directly below and 62 – 63 standing at the edge of the parking lot.





The noise level next to the fresh air intake was 66 – 69 dBA and 51 – 53 dBA at the edge of the property.



There was an air compressor inside this housing to reduce the noise emitted by the equipment. This is located between the buildings so is essentially shielded from the neighbours. Throughout the day a cooling system would come on intermittently and produce noise. Noise levels were 76 dBA next to this enclosure while it was running.



This green air compressor was the loudest noise source outside of the facility. It was reported that this compressor is part of the research department and is not usually running. On the day of testing it was running during the morning and off for the rest of the day. Close to the compressor at location 3 on the diagram noise levels were 75 – 79 dBA. While it was running noise levels around the edges of Walinga's the property were 60 – 62 dBA and while it was off levels were around 41 – 45 dBA.



Overhead of View Showing Locations of Noise Testing

Location	Noise sources	Noise Level (dBA)
1	Dual exhaust on welding building	45 - 46
	Dual exhaust, traffic on near by	48 - 51
2	Green air compressor	61
	General hum	43
3	Green air compressor	75
	Dual exhaust, silver building cooling system	60
4	Green air compressor	62
	General hum	42
5	General hum	41
6	Dual exhaust	59
7	Dual exhaust	55
8	Dual exhaust	60
9	Edge of property closest to dual exhaust	62
10	Directly under dual exhaust	70 - 71
11	Next to red central vac system	70
	Red central vac off	55
12	Red central vac running	61
13	Blue fresh air intake	51 - 53

14	General hum/dual exhaust	41
15	Dual exhaust/general hum not audible	41
	Traffic on main road	59

The plant operates only during the day shift. All of the significant noise sources (dual exhaust on northern building, paint booth exhaust, etc.) would not be operated after 6:00 PM. It is anticipated that there would be no significant contribution to ambient noise levels during off hours.

Dust Monitoring

Dust measurements were collected around the facility using an Aerocet 531S Particle Counter. Particle pollution (also called particulate matter or PM) is the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small they can only be detected using an electron microscope. Particles that are less than 2.5 micrometers (PM_{2.5}) in diameter are known as "fine" particles; those larger than 2.5 micrometers, but less than 10 micrometers (PM₁₀), are known as "coarse" particles. The Aerocet can simultaneously measure PM_{2.5} PM₁₀ and total dust.

Summary of Particulate Measurements

Particle Size	Location 1	Location 2	Location 3	Location 4	Location 5	Location 6
PM _{2.5}	5.4	4.9	6.9	6.9	4.9	7.4
PM ₁₀	25.5	22.0	46.7	43.0	34.1	47.6
Total Dust	43.0	50.0	80.1	70.1	50.4	77.2

The Manitoba Ambient Air Quality Criteria is 30 ug/m³ for PM_{2.5} and 50 ug/m³ for PM₁₀. These standards are based on a 24 hour period. The plant operates on single shift and all of the readings (both upwind and downwind of the plant) were within these criteria.

Sampling Results of Total Dust inside Building

2015 Total Dust TLV = 10 mg/m³

Location	Total Dust (mg/m ³)	Total Dust as a % of Allowable
Weld Shop Maintenance	1.18	11.8
Weld Shop Production	1.40	14.0
Weld Shop Service Bay	1.03	10.3

The air samples taken in the welding shop were also analyzed for total airborne dust. The total dust samples were all found to be well within the allowable limit for occupational standards with the values ranging from about 10 to 14% of the TLV.

VOC Testing

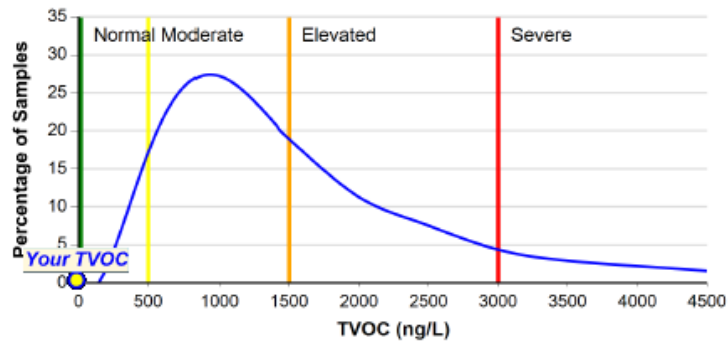
VOC testing was performed for approximately 1 hour while painting was taking place in the paint booth. One sample was taken upwind of the building and the other sample was taken approximately 100 meters downwind of the exhaust stack of the paint booth. On the day of testing there was a light wind blowing towards the south. Both the upwind and downwind levels were below the analytical method of detection. As a point of reference, 500 ng/L is considered good indoor VOC levels for a home. Neither of the samples measured detectable levels of specific compounds. The laboratory report includes a standard scan for solvents of high concern as identified by the EPA. Notice the sensitivity of the test – the method is capable of detecting 0.2 parts per billion of toluene for example. As a point of reference, the Manitoba AAQC is 94 ppb.

Downwind

Total Volatile Organic Compound (TVOC) Summary

Your TVOC Level is: < 200 ng/L

All IAQ Survey TVOC
Air Quality Indicator



EPA Hazardous Air Pollutants

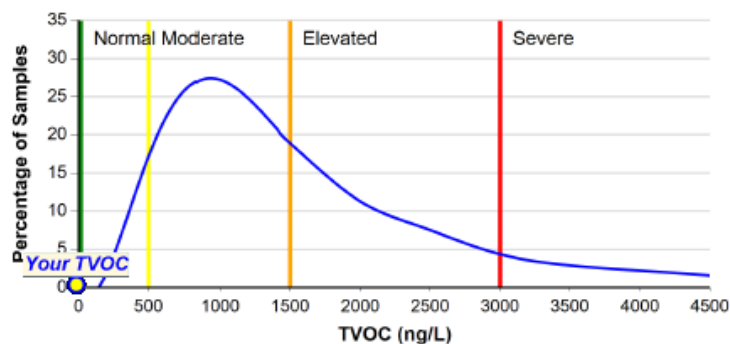
Compound	CAS	Estimated VOC Level (ng/L)	Estimated VOC Level (ppb)	NIOSH Exposure Limit	Description
Carbonyl sulfide	463-58-1	< 1	< 0.4	None Listed	Fumigant; contaminated drywall; fuel combustion byproduct; some foods; naturally occurring at low levels
Carbon disulfide	75-15-0	< 1	< 0.3	3,000 ng/L (1,000 ppb)	Solvent; fumigant; contaminated drywall; combustion byproduct
Methylene Chloride	75-09-2	< 1	< 0.3	Carcinogen	Automotive products; degreasing solvent; paint stripper; adhesive remover; aerosol propellant; insecticide
Hexane (C 6)	110-54-3	< 1	< 0.3	180,000 ng/L (50,000 ppb)	Solvent; adhesive; grease; lubricant; paints and coatings; petroleum fuel component
1,1,1-Trichloroethane	71-55-6	< 1	< 0.2	C; 1,900,000 ng/L (350,000 ppb)	Adhesives, lubricants, cleaners, solvents
Benzene	71-43-2	< 1	< 0.3	320 ng/L (100 ppb)	Gasoline. Less common sources include some discontinued solvents; printing and lithography; paints and coatings; rubber; dry cleaning; adhesives; detergents
1,2-Dichloroethane	107-06-2	< 1	< 0.2	Carcinogen; 4,000 ng/L (1,000 ppb)	PVC production; solvent for rubber, insecticides, oils, waxes, gums, resins; rug and upholstery cleaners
Trichloroethene	79-01-8	< 1	< 0.2	Carcinogen	Dry cleaning; degreasers and cleaners for home/automotive; varnish removers; anesthetic
Methyl methacrylate	80-62-6	< 1	< 0.3	410,000 ng/L (100,000 ppb)	Acrylic Polymers for paints and coatings, adhesives, fillers; solvent; pharmaceuticals; personal care
Toluene	108-88-3	< 1	< 0.3	375,000 ng/L (100,000 ppb)	Gasoline; adhesives (building and arts/crafts); contact cement; solvent; heavy duty cleaner
Tetrachloroethene	127-18-4	< 1	< 0.1	Carcinogen	Dry cleaning; adhesives, automotive cleaners, polishes
Ethylbenzene	100-41-4	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; solvent; pesticide
m,p-Xylene	108-38-3; 108-42-3	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
o-Xylene	95-47-6	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
Styrene	100-42-5	< 1	< 0.2	215,000 ng/L (50,000 ppb)	Polystyrene foam; synthetic rubber; flavoring agent
1,4-Dichlorobenzene	106-46-7	< 1	< 0.2	Carcinogen	Moth balls/crystals; room deodorant
Naphthalene	91-20-3	< 1	< 0.2	50,000 ng/L (10,000 ppb)	Gasoline; diesel; Moth balls/crystals; insecticide

Upwind

Total Volatile Organic Compound (TVOC) Summary

Your TVOC Level is: < 200 ng/L

All IAQ Survey TVOC Air Quality Indicator



EPA Hazardous Air Pollutants

Compound	CAS	Estimated VOC Level (ng/L)	Estimated VOC Level (ppb)	NIOSH Exposure Limit	Description
Carbonyl sulfide	463-58-1	< 1	< 0.4	None Listed	Fumigant; contaminated drywall; fuel combustion byproduct; some foods; naturally occurring at low levels
Carbon disulfide	75-15-0	< 1	< 0.3	3,000 ng/L (1,000 ppb)	Solvent; fumigant; contaminated drywall; combustion byproduct
Methylene Chloride	75-09-2	< 1	< 0.3	Carcinogen	Automotive products; degreasing solvent; paint stripper; adhesive remover; aerosol propellant; insecticide
Hexane (C 6)	110-54-3	< 1	< 0.3	180,000 ng/L (50,000 ppb)	Solvent; adhesive; grease; lubricant; paints and coatings; petroleum fuel component
1,1,1-Trichloroethane	71-55-6	< 1	< 0.2	C; 1,900,000 ng/L (350,000 ppb)	Adhesives, lubricants, cleaners, solvents
Benzene	71-43-2	< 1	< 0.3	320 ng/L (100 ppb)	Gasoline. Less common sources include some discontinued solvents; printing and lithography; paints and coatings; rubber; dry cleaning; adhesives; detergents
1,2-Dichloroethane	107-06-2	< 1	< 0.2	Carcinogen; 4,000 ng/L (1,000 ppb)	PVC production; solvent for rubber, insecticides, oils, waxes, gums, resins; rug and upholstery cleaners
Trichloroethene	79-01-6	< 1	< 0.2	Carcinogen	Dry cleaning; degreasers and cleaners for home/automotive; varnish removers; anesthetic
Methyl methacrylate	80-62-6	< 1	< 0.3	410,000 ng/L (100,000 ppb)	Acrylic Polymers for paints and coatings, adhesives, fillers; solvent; pharmaceuticals; personal care
Toluene	108-88-3	< 1	< 0.3	375,000 ng/L (100,000 ppb)	Gasoline; adhesives (building and arts/crafts); contact cement; solvent; heavy duty cleaner
Tetrachloroethene	127-18-4	< 1	< 0.1	Carcinogen	Dry cleaning; adhesives, automotive cleaners, polishes
Ethylbenzene	100-41-4	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; solvent; pesticide
m,p-Xylene	108-38-3; 106-42-3	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
o-Xylene	95-47-6	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
Styrene	100-42-5	< 1	< 0.2	215,000 ng/L (50,000 ppb)	Polystyrene foam; synthetic rubber; flavoring agent
1,4-Dichlorobenzene	106-46-7	< 1	< 0.2	Carcinogen	Moth balls/crystals; room deodorant
Naphthalene	91-20-3	< 1	< 0.2	50,000 ng/L (10,000 ppb)	Gasoline; diesel; Moth balls/crystals; insecticide

Locations of VOC Sampling



Paint

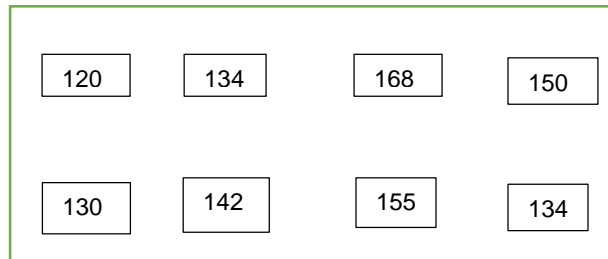
Based on a review of the most commonly used paints in the facility n-butyl acetate and total hydrocarbons as hexane were selected for testing.

Sampling Results for Paint Booth Exhaust 2015 TLV for n-Butyl Acetate = 150 ppm

Sample Location	n-Butyl Acetate (ppm/ug/m ³)	Total Hydrocarbons as Hexane (ppm)
Paint Booth Exhaust	2.168 / 10,300	4.993

The Ontario Ambient Air Quality Criteria for n-butyl acetate is 15,000 ug/m³ averaged over a 1 hour period. A sample collected in the exhaust system found a concentration of 10,300 ug/m³. Thus, it is estimated that the concentration even from the point of emission is less than the Ontario ambient air quality criteria before correcting for any dispersion or dilution in the environment. No discernible odour was present downwind during the painting operation.

The velocity of the airflow from the paint was measured as part of survey. The paint booth had an average face velocity of 142 feet per minute. This meets the generally accepted face velocity of 100 feet per minute recommended in the ACGIH Ventilation Manual.



Paint booth air flow (ft/min)

Metals

Samples were located in 4 locations inside the northern most building where some welding is performed. The results were compared to the 2015 Threshold Limit Values (TLVs). TLVs represent time-weighted average airborne concentrations to which it is believed that a worker can be exposed, 8 hours per day, 40 hours per week, without adverse effect. TLVs have been adopted in the Safety and Health legislation as the allowable exposure guidelines in Manitoba.

The exposure from the air samples are provided in the following table. The results are presented as a percentage of the allowable exposure under current occupational exposure guidelines. An exposure equal to the allowable exposure would be represented as 100%. An exposure greater than the allowable limits would be a number greater than 100%. An exposure at half of the allowable level would be 50%

Sampling Results of Manganese Testing 2015 TLV Manganese = 0.02 mg/m³ = 20 ug/m³

Sample Location	Manganese (ug/m ³)	Manganese as a % of allowable
Weld Shop Maintenance	9.31	47
Weld Shop Production	6.96	35
Weld Shop Service Bay	3.24	16
Machine Shop Main Area	0.71	3.5

There was a local exhaust system observed to be in use in the production welding area. This is likely why a higher manganese concentration was found in the maintenance area, as there was no exhaust system used in the maintenance area. Manitoba does not have an ambient criteria for manganese. One rule of thumb is dividing the occupational limit by a factor of 10 (i.e., 2 micrograms). The average manganese concentration of the indoor samples was 5 micrograms per cubic meter. If it is assumed that this is the concentration exhausted to the outside, it would be almost impossible that a concentration of greater than 2 ug/m³ would be present at or beyond the property line. Ontario uses an Ambient Air Quality Criteria of 0.4 ug/m³ for manganese averaged over a 24 hour period. Based

on a 24 average period, the emissions from the northern building would also meet this criteria.

The table below shows the sampling for hexavalent chromium emitted from the plating operation. One sample was collected 1-2 meters away from the tank to test for potential worker exposure within the plant. This value should be compared to the ACGIH TLV. A second sample was collected in the plane of the local exhaust ventilation system to measure the concentration emitted into the environment. This gives the emission concentration from the exhaust stack. The concentration would disperse and dilute with distance from the building. The concentration beyond the property line should be compared to the Manitoba Maximum Acceptable Level concentration for hexavalent chromium (chromic acid) which is 4.5 ug/m³. The plating exhaust was collected over a period of 66 minutes to compare it the 1 hour sampling period on the ambient standards is based.

Sampling Results of Chromium VI Testing

2015 TLV Chromium VI = 0.05 mg/m³ = 50 ug/m³

MB Maximum Acceptable Level = 4.5 ug/m³

Sample Location	Chromium VI (ug/m ³)
Cr Plating Area	<0.806
Cr Plating Exhaust	388

The indoor air concentration was well within the TLV. The exhaust concentration was approximately 86 times the 4.5 ug/m³ ambient air criteria. The system is a small volume system so it should disperse quickly with distance.

Acid

As part of the chrome plating process, parts are placed in an acid stripping bath before the chrome is applied. A sample for hydrochloric acid was collected from the exhaust over the acid tank.

Sampling Results for Hydrochloric Acid

Manitoba Maximum Acceptable Level = 70 ppb

Sample Location	Hydrochloric Acid (ppb)
Acid Tank Exhaust	122

The Manitoba Ambient Air Quality criteria is 70 parts per billion (0.070 ppm). Thus the emission concentration at the in the tank and/or point of emission is less than twice the ambient air quality criteria. This is an extremely low volume emission. Thus, there is no chance that an airborne concentration of more than 70 ppb would be present at or beyond the property line.

I hope this information is of assistance to you. Should you have any questions or if we can be of any further assistance, please contact me at (204) 668-3141.

Sincerely
Winnipeg Air Testing
Per:

Caroline Gebel

Caroline Gebel, B.Sc.
Industrial Hygienist

Reviewed by:

Douglas N. Wylie

Doug Wylie, CIH, ROH, CRSP, CRM
Occupational Hygienist

Copy of Laboratory Results

Total Dust

Sample ID	Cust. Sample ID	Location	Date	Pre-Wt	Time		
Parameter	Filter ID	Method		Post-Wt	Flow Rate	Vol.	Concentration
163868-001		Weld Shop 1 Maintenance	03/29/16	40.37 mg			
TND		NIOSH 0500		41.56 mg		1010 L	1.18 mg/m3
163868-002		Weld Shop 2 Production	03/29/16	40.37 mg			
TND		NIOSH 0500		41.77 mg		1000 L	1.40 mg/m3
163868-003		Weld 3 Service Shop	03/29/16	40.17 mg			
TND		NIOSH 0500		41.2 mg		999 L	1.03 mg/m3

Metals

Sample ID	Cust. ID	Location	Date	Time	Flow	Volume
Parameter		Method		Total	RL*	Conc.
163868-001		Weld Shop 1 Maintenance	03/29/16			1010 L
Manganese		NIOSH 7300M		9.36 µg	0.400 µg	9.31 µg/m3
163868-002		Weld Shop 2 Production	03/29/16			1000 L
Manganese		NIOSH 7300M		6.98 µg	0.400 µg	6.96 µg/m3
163868-003		Weld 3 Service Shop	03/29/16			999 L
Manganese		NIOSH 7300M		3.24 µg	0.400 µg	3.24 µg/m3
163868-004		Cr Plating Area	03/29/16			621 L
Chromium (VI)		NIOSH 7600		<0.500 µg	0.500 µg	<0.806 µg/m3
163868-005		Cr Plating Exhaust	03/29/16			204 L
Chromium (VI)		NIOSH 7600		79.1 µg	0.500 µg	388 µg/m3
163868-008		Main Shop Area Metals	03/29/16			1030 L
Aluminum		NIOSH 7300M		1.63 µg	1.00 µg	1.58 µg/m3
Antimony		NIOSH 7300M		<0.400 µg	0.400 µg	<0.389 µg/m3
Beryllium		NIOSH 7300M		<0.400 µg	0.400 µg	<0.389 µg/m3
Cadmium		NIOSH 7300M		<0.400 µg	0.400 µg	<0.389 µg/m3
Chromium		NIOSH 7300M		1.10 µg	1.00 µg	1.07 µg/m3
Cobalt		NIOSH 7300M		<0.400 µg	0.400 µg	<0.389 µg/m3
Copper		NIOSH 7300M		<1.00 µg	1.00 µg	<0.972 µg/m3
Iron		NIOSH 7300M		86.7 µg	1.00 µg	84.3 µg/m3
Lead		NIOSH 7300M		<0.400 µg	0.400 µg	<0.389 µg/m3
Manganese		NIOSH 7300M		0.728 µg	0.400 µg	0.707 µg/m3
Molybdenum		NIOSH 7300M		<0.400 µg	0.400 µg	<0.389 µg/m3
Nickel		NIOSH 7300M		<0.400 µg	0.400 µg	<0.389 µg/m3
Titanium		NIOSH 7300M		<0.400 µg	0.400 µg	<0.389 µg/m3
Vanadium		NIOSH 7300M		<0.400 µg	0.400 µg	<0.389 µg/m3
Zinc		NIOSH 7300M		<1.00 µg	1.00 µg	<0.972 µg/m3

METALS EXPOSURE DATA & CALCULATIONS

CLIENT:	Walinga Inc.	TYPE OF SAMPLE:	Area
LOCATION:	3rd Ave. NE, Carman, MB	WORK STATION:	Machine Shop
DATE:	March 29, 2016	CONTROLS:	None

Cassette Number	Run Time (minutes)	Flow Rate (LPM)	Volume (m3)
	343	3	1.029

Chemical	2015 TLV (mg/m3)	Result (ug)	Health Effect	TWA (mg/m3)	Exposure (% of TLV)
Aluminum	1	1.63	lung, irritation, neurotoxicity	0.002	0.2
Antimony	0.5	0.4	Respiratory tract irritation	0.000	0.1
Cadmium	0.01	0.4	kidney damage	0.000	3.9
Chromium (III)	0.5	1.1	irritation	0.001	0.2
Cobalt	0.02	0.4	asthma, lung, CVS	0.000	1.9
Copper-Fume	0.2	1	irritation, GI, fume fever	0.001	0.5
Iron Oxide	5	86.7	pneumoconiosis	0.120	2.4
Lead	0.05	0.4	CNS, blood, kidney, repro	0.000	0.8
Manganese	0.02	0.728	CNS Impairment	0.001	3.5
Molybdenum	10	0.4	Respiratory tract irritation	0.000	0.0
Nickel (elemental)	1.5	0.4	lung, irritation, dermatitis	0.000	0.0
Titanium Dioxide	10	0.4	lung	0.000	0.0
Vanadium Pentox	0.05	0.4	irritation, lung	0.001	2.0
Zinc Oxide - Fume	2	1	Metal Fume Fever	0.001	0.1

Dominant Health Effect:
Combined Exposure (as % of permissible)

Kidney Damage
5%

n-Butyl Acetate

Sample Location	Sample Volume (L)	Total BuAc (mg)*	Actual Exp (mg/m³)*	Actual Exp (PPM)	Report Limit (mg)**
Paint Booth Exhaust	20.70	0.213	10.300	2.168	0.040

Total Hydrocarbons as Hexane

Sample Location	Sample Volume (L)	Total HC (mg)*	Actual Exp (mg/m³)*	Actual Exp (PPM)	Report Limit (mg)**
Paint Booth Exhaust	20.70	0.364	17.589	4.993	0.105

Hydrochloric Acid

Sample Location	Sample Volume (L)	Total HCl (mg)*	Actual Exp (mg/m³)*	Actual Exp (PPM)	Report Limit (mg)**
HCl Strip Exhaust	112.20	0.020	0.182	0.122	0.010

Our File No. A640 0002 001 001 07

March 14, 2016

Walinga Inc.
Box 1790
70 - 3rd Avenue, NE
Carman, Manitoba
R0G 0J0

Sent via Email: cor.lodder@walinga.com

Attention : Mr. Cor Lodder

Re: Ventilation Design Summary
Walinga Inc.
Carman, Manitoba

Dear Mr. Lodder:

Accutech Engineering Inc. (Accutech) was retained by Walinga Inc. to complete the facility ventilation plan for the proposed plating facility in Walinga's Carman plant. As part of this design, Walinga Inc. has requested assistance from Accutech in completing a portion of an Environmental Act Proposal as it pertains to the new ventilation system designed.

The following report constitutes Accutech's summary of:

- Rationale behind the development of the design
- Products and techniques being used
- Associated design standards used to create the design
- Summary of air volumes and processes
- Description of proposed stages of development for implementation of the ventilation project
- Types of chemicals and classifications according to the American Conference of Governmental and Industrial Hygienists (ACGIH)

This report is intended to be submitted along with the Issue for Tender Drawing package and Addenda 1 to 3 for the Walinga Tank Ventilation Design Project.

Introduction and Background

The Machining Division of Walinga Inc., located at 70 - 3rd Avenue NE, in Carman, Manitoba, is planning on introducing a new plating line into their manufacturing facility. The purpose of the new ventilation system is to remove potentially hazardous chemicals

Walinga Inc.
Mr. Cor Lodder
 March 14, 2016

Page 2 of 4

from the breathing zone of the facility and exhaust them to the atmosphere.

The new tank ventilation design at Walinga Inc. has been created using the following guidelines and standards:

- American Society of Heating, Refrigeration, and Air Conditioning (ASHRAE) 62.1 – The Standards for Ventilation and Indoor Air Quality
- National Building Code 2010
- ACGIH – Industrial Ventilation - A Manual of Recommended Practice for Design - 27th Edition

The purpose of the ventilation system designed is protecting workers from potentially harmful effects of the various chemicals used in the plating line, by the stripping process, and the by-products created by the various reactions that are taking place. A further influence in the design is to provide a high quality system that will be durable and long lasting in this role.

Table 1: Summary of Air Flow Volumes, Potential Contaminants, and Classifications

Tank	Process	Exhaust Air Required	Design Chemical	ACGIH Classification*	Potential Breathing Zone Contaminant
Corvor Tank 1	Plating	6,000cfm	Nickel II	A1	Nickel Sulfate Mist
Corvor Tank 2 Number	Plating	6,000cfm	Nickel II	A1	Nickel Sulfate Mist
HCl	Cleaning	6,000cfm	HCl	A1	Acid Mist, Hydrogen Chlorine Gas
Electroclean	Cleaning	3,200cfm	NaOH	C2	Alkaline Mist, Steam
Stripper Tank	Stripping	6,000cfm	3-sodium nitrobenzoate	A2	Alkaline Mist, Steam
General Ventilation	n/a	3,000cfm	n/a	n/a	
Subtotal		30,200cfm			

* Classification per ACGIH Standards for Determination of Hazard Potential, Determination of Rate of Gas, Vapour or Mist Evolution (Table 13-70-1 and 13-70-2).

Description of Proposed Development

The purpose of the tank ventilation design is to ensure a safe and healthy work environment for employees of the facility.

During the plating process, potentially harmful contaminants are continuously collected via dedicated exhaust hoods (refer to drawing package) and the vapours are exhausted to the atmosphere. Each tank has been given a dedicated exhaust duct and fan to ensure that

Walinga Inc.
Mr. Cor Lodder
March 14, 2016

Page 3 of 4

cross-contamination of chemicals does not occur. Each exhaust stack is also equipped with an exhaust nozzle at the stack termination to expel air at a higher velocity.

Each exhaust stack is also equipped with a low level drain. Walinga Inc. will establish maintenance procedures to regularly drain condensate and precipitation from the exhaust stack, and dispose of the condensate according to safe work practices.

Air being exhausted is to be replaced with an equivalent volume of air from a direct-fired make-up air unit located outside of the facility.

The schedule of the proposed renovation is to commence construction in the early spring of 2016, with construction being complete and the renovated plating facility being operational by the end of summer 2016.

Construction is planned to be completed in a single stage. Refer to Issue for Tender drawings and Addenda 1 to 3 of the Tank Ventilation project for scope of work.

Description of Environmental and Human Health Effects of the Proposed Development

Table 1 lists the vapours and chemicals that are being exhausted by the proposed ventilation system. The classification of these chemicals refers to the ACGIH classifications found in Appendix A of *Industrial Ventilation: A Manual of Recommended Practice for Design – 27th Edition*.

Table 2: Hygienic Standards for Chemicals (Table 13-70-1 ACGIH: Industrial Ventilation)

Hazard Potential	STEL Mist Concentration
A	0-0.1 mg/m ³
B	.11-1.0 mg/m ³
C	1.1-10 mg/m ³
D	Over 10 mg/m ³

The designed ventilation rates and volume of air flow for each chemical have been established to maintain the concentration of the airborne chemicals in the working area below the Time-Weighted Average (for 40 hour work work), or Short-Term Exposure Limits (STEL) for each chemical as established by ACGIH, under normal operating conditions.

Walinga Inc.
Mr. Cor Lodder
March 14, 2016

Page 4 of 4

Environmental Mitigation Measures and Residual Environmental Effects

The environmental mitigation measures taken into account for this renovation are:

- 1) Utilizing industry accepted standards for ventilation design.
- 2) Large air volumes to decrease concentration of potential contaminants.
- 3) Welded ductwork to minimize the potential for leaks.
- 4) Locked condensate drains in each exhaust duct.

Yours truly,
ACCUTECH ENGINEERING INC.



Dan Nenadov
Mechanical E.I.T / Project Manager



ENVIRONMENTAL POLICY

POLICY:

Walinga Inc. is committed to ensuring the environment is protected by meeting or exceeding all federal and provincial environmental legislation.

HAZARDOUS WASTE:

Purpose:

To ensure Walinga Inc. meet all federal and provincial environmental requirements by continuously evaluating less hazardous chemical, close control of all its processes and the proper handling, storage and disposal of chemical waste.

Responsibilities:

Management:

- (i) To ensure environmental legislation is complied with at all times.
- (ii) Ensure all equipment is properly maintained.
- (iii) Provide the necessary equipment to ensure proper handling and care can be exercised at all times.
- (iv) Provide employees handling chemical hazardous substances with the necessary training.
- (v) Establish an Environmental Committee.
- (vi) Ensure Quality Control program is in place to minimize waste generation.

Health & Safety Committee:

- (i) Identify all toxic/hazardous substances
- (ii) Ensure that incident reporting procedures are in place and are being followed.
- (iii) Inspect work place on a regular basis . Appendix 13.
- (iv) Assist in developing training programs where required.

Supervisor:

- (i) Ensure all employees are trained in proper handling and use of hazardous/toxic substances.
- (ii) Assist with the evaluation of processes to reduce or eliminate the use of hazardous substances.
- (iii) Enforce strict Quality Control procedures to reduce waste generation.

Worker:

- (i) Follow all guidelines in respect to environmental control and procedures.
- (ii) Ensure all spills are reported - Appendix 13.
- (iii) Assist with cleanup.



MANITOBA ENVIRONMENT INSPECTIONS

PROCEDURE:

Dept. of the Environment will prearrange or have an unannounced inspection visit.

* Designated employee will accompany Dept. of Environment inspector while inspection is being conducted.

Dept. of Environment inspector will receive full co-operation during the course of inspection.

Notes will be taken by company representative of photographs taken, what is seen, who has been interviewed, what was said and sampling procedures and locations. Report filed by H & S Coordinator

A list will be prepared of all documents or photocopies.

Ensure representative samples are taken for possible analysis by an independent lab.

* If Dept. of the Environment conducts an unannounced inspection the following must be established:

- (a) Purpose of investigation and or nature of problem.
- (b) If specific date or series of dates is under investigation
- (c) Specific location or source which is under investigation
- (d) The section of which regulation or Act which may have been violated.

Operations

Walinga manufactures components for the Walinga Pneumatic Conveying Systems. An example of some of the products manufactured at the plant include:

1. 2018 Airlock Rotors (2018 Airlock)
2. 614 Impellers (614 Blower)
3. 614 Blower Castings (614 Blower)

Manufacturing Processes

2018 Airlock Rotors

Raw material for the shafts & pipes are cut on the Automated HYD-MECH S20A horizontal Band saw which uses recycled Coolant Oil from our CNC Machining Centers to cut material. Coolant is recycled once again through this Saw using a screen filter and holding tank. Chips from this Saw cutting process are emptied from the screen into 5 gallon pails for disposal in the Urban Mine Scrap Bin.

Once Shafts are cut to length the shafts are transported using a diesel operated Forklift to the HAAS ST-40 CNC Machining Center – Walinga Asset # 937. (Ref. Machining Process) Shafts are faced & center drilled on the ST-40 using an 8800 Com-Cool Coolant mixed 5% with Town Water. Any machining chips produced from the machining process are collected using a chip conveyor built into the machine and deposited into a chip bin. Once the chip bin is full, the bin is dumped into the Urban Mine Scrap Bin.

Pipes are brought to the shot blaster to be cleaned for welding. The shot blaster, located in the paint area, uses steel shot which mixes with high flow air pressure to blast the pipes clean. The steel shot is recycled and continuously used. Any dust that is released from the shot blaster is disposed of using a Walinga Central Vac that is directly piped to the shot blaster. Once the Central Vac Bin is full it is dumped into the steel turnings bin and disposed of via Urban Mine.

Once the Shafts are faced & center drilled the shafts & pipes are brought to the welding area to be welded together. The Welder uses Blue Shield 6 Gas with a LA-C6 Welding Wire. The Welding area is located in Bay 1&2 in the Service Shop, which has a fresh air system that works in conjunction with a squirrel fan located in the welding area. The Fresh air system pumps fresh air into the shop, while the squirrel fan sucks the welding smoke out into the atmosphere. (Ref: Winnipeg Air Testing report attached.)

Once the Rotor Hub (Welded shaft & pipe) are welded together they are brought to the Mori Seiki – CNC Machining Center – Walinga Asset # 741. (Ref. Machining Process) This CNC Machine uses 8800 Com-Cool Coolant mixed 5% with Town Water. Any machining chips produced from the machining process are collected using a conveyor built into the machine and deposited into a chip bin. Once the chip bin is full, the bin is dumped into the Urban Mine Scrap Bin.

The finished Rotor Hub is brought to the welding area to have veins welded onto the Hub, which are then transferred back to the ST-40 for the final machining process.

614 Impellers

Raw Cast Iron Casting is brought to the Toyoda – CNC Machining Center – Walinga Asset #747. (Ref. Machining Process) for rough machining. The second operation on the Toyoda machines the outside of the impeller. This CNC Machine uses 8800 Com-Cool Coolant mixed 5% with Town Water. Any machining chips produced from the machining process are collected using a conveyor built into the machine and deposited into a chip bin. Once the chip bin is full, the bin is dumped into the Urban Mine Scrap Bin.

The Roughed Profiled Impeller is sent to the CNC Planer – Walinga Asset #755. (Ref. Machining Process) for to finish the profile. Any dust that is released from the planer is disposed of using a Walinga Central Vac System that is directly piped to the CNC Planer. Once the chip bin is full, the bin is dumped into the Urban Mine steel turnings Scrap Bin.

Once the Profile is finished the finished Impeller is sent to the Chrome room for a finished coating. The 614 Impellers are put in the parts washer located in the Chrome Room to get washed in hot water for 5-10 minutes. The parts washer is plumbed into the sump pit in the Machine Shop to collect any chips, dirt etc. from going into the sewer system.

Once the 614 Impeller is washed it is put on a jig and lowered into the cold water rinse tank to get washed & scrubbed with Comet household cleaner. The cold water rinse tank is 850 liters and is changed annually. Waste water is emptied into a tote for pickup and disposal via Miller Environmental.

Once the 614 Impeller is cleaned it is hooked up to the charge bar and lowered into the Hexavalent Chrome Tank for 35 minutes at 3500 Amps. The electrical current ranges from 6-12 volts and 500-5500 amps. The Chrome tank has a plastic honey comb air scrubber filters that is mounted directly above the tank. The filter is changed and rinsed daily as well they are removed and inspected semi-annually for damage. These filters last for 10-20 years, yet if disposal is required they are disposed of via Miller Environmental. The Hexavalent Chrome tank is maximum 1,052 liters. Tank is added to on an as needed basis.

Once Chroming has been completed the finished 614 Impeller is dipped in the rinse tank to release any excess chromium. The rinse tank is 932 liters and is changed bi-annually. Waste water is emptied into a tote for pickup via Miller Environmental.

In the case that the impeller failed the chroming process it is then stripped in the Hydrochloric Acid tank for anywhere from a day to two days. The Hydrochloric Acid tank has a squirrel fan directly above the tank pulling fumes into the atmosphere. (Ref: Winnipeg Air Testing - report attached.)

Employees are required to wear proper PPE when working in the wash/rinse & chrome tank area at all times. These PPE's include: Rubber Gloves, Plastic Aprons, CSA Approved Footwear, and a PUREFLO ESM Air Hood. Employees are also required to provide a urine sample for Chromium Testing semi-annually which is reviewed with Management, Employee, and Employees Doctor. (Ref: Walinga Health & Safety Policy – attached.)

614 Blower Castings

Raw Castings are brought to the NX 76 – CNC Machining Center – Walinga Asset # 745. (Ref. Machining Process) to get rough machined. This CNC Machine uses 8800 Com-Cool Coolant mixed 5% with Town Water. Any machining chips produced from the machining process are collected using a conveyor built into the machine and deposited into a chip bin. Once the chip bin is full, the bin is dumped into the Urban Mine Scrap Bin.

Rough Machined Castings are brought off site for Thermal Stress Relieving and upon their return are finished machining on the NX 76 – CNC Machining Center and measured for accuracy.

Once final machining is complete the Castings are brought for Chroming using the same process as the 614 Impellers.

Once the 614 Blower Castings are finished Chroming they are brought to the Haas mini mill to have excess chrome milled on the ends of the castings.

614 Impellers & 614 Castings are assembled with other misc parts to build a finished 614 Blower.

Once 614 Blower is assembled it is sent for paint. The paint shop consists of a filtered booth which exhausts the filtered air conventionally to the atmosphere using a stack on the roof of the building. Filters are changed as paint accumulation is noticed on the openings of the filter. The filters are an ANDREA paint over spray filter #AF813. Filters are disposed of via Pembina Valley Containers. Employees wear a fresh air hood and full Tyvek paint suit while in the paint booth at all times.

The 614 Blower is Acid washed in the paint booth using a DUJEL 200 Acid and let sit for 10-15 minutes. Once the 15 Minutes is up the 614 Blower is washed with a SYN 3-X mixed 2% with Town Water to neutralize the Acid. The 614 Blower is then rinsed with a Secure Stream FRP Paint Adhesion to assist in paint adhesion.

All Paint is Sherwin Williams brand (traditional wet paint process) and is stored in JUSTRITE fire proof storage cabinets. Paint is mixed on a mixing table using a squirrel fan to release emissions into the atmosphere. The volume of emissions from the primer & paint used are as follows:

US3 – 7.07 Lb/Gal

V6V 965 – 3.15 Lb/Gal

E2A 960 – 1.95 Lb/Gal

GH1093 – 2.91 Lb/Gal

Paint – 1.49 – 10 Lb/Gal (depending on color)

614 Blower is primed & painted resulting in a finished product.

Custom Machining & Welding

Walinga Custom Machining is the production of a variety of products for different customers.

CNC Herbert Lathe – Walinga Asset # 757. (Ref. Machining Process) Machine is used as part of our custom machining. Machine uses Hydrex TK 68 Waylube. Any machining chips produced from the machining process are collected in 5 gallon pails and deposited in the Urban Mine Scrap Bin.

CNC Manual Mazak – Walinga Asset # 759. (Ref. Machining Process) Machine is used as part of our custom machining. Machine uses AW 22 Cutting Oil. Any machining chips produced from the machining process are collected in 5 gallon pails and deposited in the Urban Mine Scrap Bin.

Walinga does custom welding, both Aluminum & Steel for various custom work as well in the Service of Walinga's line of Hopper Auger Feed Trailers. Steel welders use Blue Shield 6 Welding Gas, while the Aluminum Welders use Argon Welding Gas. The Welding area is located in Bay 3 & 4 in the Service Shop. The Fresh air system pumps fresh air into the shop, while also pulling gasses up and out into the atmosphere. (Ref: Winnipeg Air Testing report – attached.)

WALINGA INC. - EAP – Machining Process

Haas St-40 – CNC Machining Center – Walinga Asset # 937

- **What does this Machine Do?**

This machine holds on to round parts with a chuck. The chuck turns the raw metal, cast iron or aluminum and the turret holds the cutting tools. The chuck is turned on via the main computer of the machine and then the machine pulls up the program and then the turret with cutting tool comes and peels metal off the bar and makes it the desired size that the program is telling it to do. The machine takes care of the fumes from the cutting action with its own built-in mist extractor, and the chips from turning get taken out the machine via a chip conveyor.



- **What Walinga Parts do we run on this machine?**

Walinga parts on this machine are rotors, endplates, couplings, some of these are aluminum and some are cast iron and some are steel.

- Filter Type – Coolant filter - Canister style bag type #2 25 microns Haas - #93-9130
- Filter Type - Air/mist extractor - Haas filter enclosure exhaust - #59-1520
- Coolant Filter is replaced once a year. Used filters are disposed of via Pembina Valley Containers. Mist filters are washed once a month inside the machine in a closed loop system.
- Chip Bin is emptied into container for pickup by Urban Mine.
- Coolant is recycled through the machines. Coolant is replaced annually & disposed of via Clean Harbors.
- Machine take a Hydrex Oil AW 32 - 20 Liters
- Machine take a 100 mesh -140 micron Haas Filter #59-0798

Studer S33 – CNC Machining Center - Walinga Asset # 743

- **What does this Machine Do?**

Used to shape the outside of an object. The cylindrical grinder can work on a variety of shapes, however the object must have a central axis of rotation. This includes but is not limited to such shapes as a cylinder, an ellipse, a cam, or a crankshaft.



- **What Walinga Parts do we run on this machine?**

Impellor shafts and shaft sleeves with a variety of tooling.

- Filter Type - Coolant filter - Blanket style - Studer brand - 25 microns.
- Coolant filter is replaced every three years. Used filters are disposed of via Pembina Valley Containers.
- Chip Bin is emptied into container for pickup by Urban Mine.

05-09-16

- Coolant is recycled through the machines. Coolant is replaced annually & disposed of via Clean Harbors.
- Machine takes a Shell Tonna S32 Oil - 16 litres - Oil filter #A5490118 & #G4862
- Oil & Filters are replaced annually.

Haas VF-6 – CNC Machining Center - Walinga Asset # 737

- **What does this Machine Do?** This machine uses a milling cutter to remove material from the surface of a workpiece. The milling cutter is a rotary cutting tool, often with multiple cutting points. As opposed to drilling, where the tool is advanced along its rotation axis, the cutter in milling is usually moved perpendicular to its axis so that cutting occurs on the circumference of the cutter. As the milling cutter enters the workpiece, the cutting edges (flutes or teeth) of the tool repeatedly cut into and exit from the material, shaving off chips from the workpiece with each pass. The cutting action is shear deformation; material is pushed off the workpiece in tiny clumps that hang together to a greater or lesser extent (depending on the material) to form chips.



The milling process removes material by performing many separate, small cuts. This is accomplished by using a cutter with many teeth, spinning the cutter at high speed, or advancing the material through the cutter slowly; most often it is some combination of these three approaches. The speeds and feeds used are varied to suit a combination of variables. The speed at which the piece advances through the cutter is called **feed rate**, or just **feed**; it is most often measured in length of material per full revolution of the cutter.

There are two major classes of milling process:

- In **face milling**, the cutting action occurs primarily at the end corners of the milling cutter. Face milling is used to cut flat surfaces (faces) into the workpiece, or to cut flat-bottomed cavities.
- In **peripheral milling**, the cutting action occurs primarily along the circumference of the cutter, so that the cross section of the milled surface ends up receiving the shape of the cutter. In this case the blades of the cutter can be seen as scooping out material from the work piece. Peripheral milling is well suited to the cutting of deep slots, threads, and gear teeth.

The machine takes care of the fumes from the cutting action with its own built in mist extractor, and the chips from turning get taken out the machine via a conveyor.

- **What Walinga Parts do we run on this machine?**

We run cast iron casings and endplates, on this machine. Also some aluminum covers.

05-09-16

- Filter Type – Coolant filter – Supplemental chip tray filter basket – HAAS Brand - #30-10904
 - Filter Type - Air/mist extractor - Haas filter enclosure exhaust - #59-1520
 - Coolant filter is replaced annually. Used filters are disposed of via Pembina Valley Containers.
 - Mist filters are washed once a month inside the machine in a closed loop system.
 - Chip Bin is emptied into container for pickup by Urban Mine.
 - Coolant is recycled through the machines. Coolant is replaced annually & disposed of via Clean Harbors.
 - Machine takes a Mobil SHC 627 Oil.
 - Oil is Replaced Annually.
-

Mazak – CNC Machining Center - Walinga Asset # 739

- **What does this machine do?** This machine holds on to round parts with a chuck. The chuck turns the raw metal, cast iron or aluminum and the turret holds the cutting tools. The chuck is turned on via the main computer of the machine and then the machine pulls up the program and then the turret with cutting tool comes and peels metal off the bar and makes it the desired size that the program is telling it to do. The machine takes care of the fumes from the cutting action with its own built in mist extractor, and the chips from turning get taken out the machine via a conveyor.



- **What Walinga parts do we run on this machine?**

Cast Bearing Cartridges, aluminum couplings, steel couplings, Steel timing hubs, steel shaft sleeves are some of the parts.

- Filter Type – Mist extractor - Multi-Flo
 - Filter Type - Extended surface air filter - Koch filter corporation #112-650-010
 - Filters are replaced every 3-6 months depending on machine use.
 - Used filters are disposed of via Pembina Valley Containers.
 - Chip Bin is emptied into container for pickup by Urban Mine.
 - Coolant is recycled through the machines. Coolant is replaced annually & disposed of via Clean Harbors.
 - Machine takes 5 Liters LLC YZ (long life coolant) 50/50 Mix with distilled water.
 - Machine takes 20 Liters Hydrex AW 32 Oil.
 - Oil is replaced annually.
-

Toshiba NX76 – CNC Machining Center – Walinga Asset # 745

- **What does this machine do?** This machine uses a milling cutter to remove material from the surface of a workpiece. The milling cutter is a rotary cutting tool, often with multiple cutting points. As opposed to drilling, where the tool is advanced along its rotation axis, the cutter in milling is usually moved perpendicular to its axis so that cutting occurs on the circumference of the cutter. As the milling cutter enters the workpiece, the cutting edges (flutes or teeth) of the tool repeatedly cut into and exit from the material, shaving off chips from the workpiece with each pass. The cutting action is shear deformation; material is pushed off the workpiece in tiny clumps that hang together to a greater or lesser extent (depending on the material) to form chips.



The milling process removes material by performing many separate, small cuts. This is accomplished by using a cutter with many teeth, spinning the cutter at high speed, or advancing the material through the cutter slowly; most often it is some combination of these three approaches. The speeds and feeds used are varied to suit a combination of variables. The speed at which the piece advances through the cutter is called **feed rate**, or just **feed**; it is most often measured in length of material per full revolution of the cutter.

There are two major classes of milling process:

- In **face milling**, the cutting action occurs primarily at the end corners of the milling cutter. Face milling is used to cut flat surfaces (faces) into the workpiece, or to cut flat-bottomed cavities.
- In **peripheral milling**, the cutting action occurs primarily along the circumference of the cutter, so that the cross section of the milled surface ends up receiving the shape of the cutter. In this case the blades of the cutter can be seen as scooping out material from the work piece. Peripheral milling is well suited to the cutting of deep slots, threads, and gear teeth.

The machine takes care of the fumes from the cutting action with its own built in mist extractor, and the chips from turning get taken out the machine via a conveyor.

- **What Walinga parts do we run on this machine?**

We run cast iron casings and endplates, on this machine. Also some aluminum covers.

- No coolant filters or air filters on this machine.
- Electrical cabinet takes 20/10 furnace filter - Co-op brand.
- Chip Bin is emptied into container for pickup by Urban Mine.
- Coolant is recycled through the machines. Coolant is replaced annually & disposed of via Clean Harbors.
- Machine takes 150 Liters - HM 22/ convert to Hydrex AW 22 Oil.

05-09-16

- Filter is a Wix Filter R05D10C or as replacement, Donaldson Filter # P171810
- Oil is replaced annually.

Toyota – CNC Machining Center - Walinga Asset # 747

- **What does this machine do?** This machine uses a milling cutter to remove material from the surface of a workpiece. The milling cutter is a rotary cutting tool, often with multiple cutting points. As opposed to drilling, where the tool is advanced along its rotation axis, the cutter in milling is usually moved perpendicular to its axis so that cutting occurs on the circumference of the cutter. As the milling cutter enters the workpiece, the cutting edges (flutes or teeth) of the tool repeatedly cut into and exit from the material, shaving off chips from the workpiece with each pass. The cutting action is shear deformation; material is pushed off the workpiece in tiny clumps that hang together to a greater or lesser extent (depending on the material) to form chips.



The milling process removes material by performing many separate, small cuts. This is accomplished by using a cutter with many teeth, spinning the cutter at high speed, or advancing the material through the cutter slowly; most often it is some combination of these three approaches. The speeds and feeds used are varied to suit a combination of variables. The speed at which the piece advances through the cutter is called **feed rate**, or just **feed**; it is most often measured in length of material per full revolution of the cutter.

There are two major classes of milling process:

- In **face milling**, the cutting action occurs primarily at the end corners of the milling cutter. Face milling is used to cut flat surfaces (faces) into the workpiece, or to cut flat-bottomed cavities.
- In **peripheral milling**, the cutting action occurs primarily along the circumference of the cutter, so that the cross section of the milled surface ends up receiving the shape of the cutter. In this case the blades of the cutter can be seen as scooping out material from the work piece. Peripheral milling is well suited to the cutting of deep slots, threads, and gear teeth.

The machine takes care of the fumes from the cutting action with its own built in mist extractor, and the chips from turning get taken out the machine via a chip conveyor.

- **What Walinga parts do we run on this machine?**

We run cast iron casings and endplates, on this machine. Also some aluminum covers.

05-09-16

- Filter Type - Mist extractor - Multi-Flo
 - Filter Type - Extended surface air filter - Koch filter corporation #112-650-010 Air filter is replaced every 3-6 months depending on machine use. Filter is disposed via Pembina Valley Containers.
 - Filter Type - Coolant filter - canister style 25 microns. Filter is replaced every three months. Used filters are disposed of via Pembina Valley Containers.
 - Chip Bin is emptied into container for pickup by Urban Mine.
 - Coolant is recycled through the machines. Coolant is replaced annually & disposed of via Clean Harbors.
 - Machine takes 60 Liters Velocite # 3 Cooling Oil.
 - Machine takes 70 Liters Turboflo Rand O 32 Oil.
 - Oil is replaced annually.
-

Mori Seiki – CNC Machining Center – Walinga Asset # 741

- **What does this machine do?** This machine holds on to round parts with a chuck. The chuck turns the raw metal, cast iron or aluminum and the turret holds the cutting tools. The chuck is turned on via the main computer of the machine and then the machine pulls up the program and then the turret comes and peels metal off the bar and makes it the desired size that the program is telling it to do. The machine takes care of the fumes from the cutting action with its own built in mist extractor, and the chips from turning get taken out the machine via a conveyor.



- **What Walinga Parts do we run on this machine?**

Rough cut gear blanks, steel impellor shafts, splining assorted couplings.

- Filter Type - Mist extractor- Multi-Flo
 - Filter Type - Extended surface air filter – Koch filter corporation #112-650-010 Air filter is replaced every 3-6 months depending on machine use. Filter is disposed via Pembina Valley Containers.
 - Chip Bin is emptied into container for pickup by Urban Mine.
 - Coolant is recycled through the machines. Coolant is replaced annually & disposed of via Clean Harbors.
 - Machine takes 60 Liters Hydrex AW 32 Oil.
 - Machine takes 2 Liters Velocite #3 Cooling Oil.
 - Oil Filter is Yamashin OT 2-04-30-15-R/c ½ model # 12312FD
 - Oil is replaced annually.
-

05-09-16

CNC Planer - Walinga Asset # 755

- **What does this machine do?**

The parts are clamped in the machine, with the clamps on the shafts so that the profile can be formed with a cutter being pulled across the part while the table travels back and forth. As the table moves the tool moves along the profile of the part and this action is guided by a computer controlling the servo motors. The cast iron chips get sucked up using the central vac.

- **What Walinga parts do we run on this machine?**

This machine only runs impellers.

- Filter Type – Central Vac air suction. Runs through a particle filter.
- The filter is replaced annually. Used filters are disposed via Pembina Valley Containers.
- Machine uses TK 68 way lube.



Surface Grinder – Walinga Asset #

- **What does this machine do?**

Surface grinding is the most common of the grinding operations. It is a finishing process that uses a rotating abrasive wheel to smooth the flat surface of metallic or nonmetallic materials to give them a more refined look or to attain a desired surface for a functional purpose.

The surface grinder is composed of an abrasive wheel, a workholding device known as a chuck or a magnet and a reciprocating or rotary table. The magnet holds the material in place while it is being worked on. The table reciprocates back and forth with the grinding wheel turning against the part .0005” at a time. This gets done until the part is perfectly flat, with no machine lines showing up.

- **What Walinga parts do we run on this machine?**

Airlock tips

- Filter Type - screen filter with a magnetic siphon filter which collects metal shavings from the coolant.
 - Chip Bin is emptied into container for pickup by Urban Mine.
 - Machine takes 8800 Com-Cool coolant at 5% mix with water.
 - Machine takes 40 Liters Hydrex XV All season oil.
 - Oil is replaced annually.
-

05-09-16

SM Lathe 2060 - Walinga Asset #761

- **What does this machine do?** This machine rotates the workpiece on its axis to perform various operations such as cutting, sanding, knurling, drilling, or deformation, facing, turning, with tools that are applied to the workpiece to create an object with symmetry about an axis of rotation. **What Walinga parts do we run on this machine?**

Assorted impellers, and facing and center drilling shafts. Facing cast iron endplates for airlocks also get machined on this machine.

- Machine takes 30 Liters Hydrex AW 22 Oil.
- Oil is replaced annually.



Portable Power Pack – Walinga Asset # 781

- Used for Hydraulic Operations Used on Walinga Agri-Vacs to test Hydraulic Operations.
- Power Pack takes 60 Liters Hydrex XV All Season Oil
- Parker SM 6720 Oil Filter
- Oil is replaced every 5 years.



Waste oil receiver – Walinga Asset # 944

- Pumps used oil from service shop to the waste oil container outside. Used Oil is picked up by GFL (Green For Life - Environmental Corp).



Custom Machining

Walinga Custom Machining is the production of a variety of products for different Customers. Walinga uses the same processes with Custom Machining as regular production.

05-09-16

Herbert Lathe - Walinga Asset # 757

- **What does this machine do?**

This machine rotates the workpiece on its axis to perform various operations such as cutting, sanding, knurling, drilling, or deformation, facing, turning, with tools that are applied to the workpiece to create an object with symmetry about an axis of rotation.

- Machine is used as part of our Custom Machining Process.
- Machine takes 2 Liters Hydrex TK 68 Way lube.
- Oil is replaced every 5 years.



Manual Mazak – Walinga Asset # 759

- **What does this machine do?**

This machine rotates the workpiece on its axis to perform various operations such as cutting, sanding, knurling, drilling, or deformation, facing, turning, with tools that are applied to the workpiece to create an object with symmetry about an axis of rotation. (This machine is similar to the Herbert Lathe shown in photo above.)

- Machine is used as part of our Custom Machining Process.
- Machine takes AW 22 Oil.
- Oil is replaced annually.

May 30, 2016



Walinga Inc. – EAP

To: Environmental Approvals Branch - Manitoba Conservation and Water Stewardship

Att: Eshetu Bashada

From: Walinga Inc. - Cor Lodder (cor.lodder@walinga.com Phone 204-745-2951 x428)

Re: Environmental Act Proposal Form – Follow-up item – Reason for Change

Why are we replacing Industrial Hard Chrome with this new “CORVOR” hard coating?

And why is it more health & wellness and environmentally beneficial?

What changes are we making to our operation and what do we see for growth?

Why are we replacing Industrial Hard Chrome with this new “CORVOR” hard coating?

Some 15 years ago, Walinga Inc made the decision to pursue alternatives for our Industrial Hard Chrome Plating Process. This was in response to the increased pressure from the Canadian and US governments desire to gradually phase out the use of Chromium in manufacturing processes. There is also a European mandate that bans the use of Hexavalent Chromium Chemistry by September 21, 2017.

The technical details of the new hard coating process is outlined in the report supplied and dated May 18, 2016 under the sub-title of: **The Environmental Benefits of Composite Electroless Nickel Coatings**. This report also highlights some of the reasons to eliminate Hard Chromium from the manufacturing environment.

Then after many years of testing numerous “Hard Chrome Alternatives” (HCA), we found a proprietary process that was not only superior in abrasive wear resistance, but was also more health & wellness, and environmentally responsible than Industrial Hard Chrome. In February 2011 we signed a Non-Disclosure Agreement (NDA) and a Technology Transfer Agreement with the company that developed this composite electroless nickel (CEN) coating. (Walinga has given this hard coating a trade and marketing name of “CORVOR”. This name is exclusive to Walinga and is currently being registered as our trademark.) The Walinga product is a world leader in quality and performance, with “Hard Chromed Blowers” as a key component to maintaining the longest lasting and most wear resistant blower in the industry. Our leadership in Bulk Transportation Equipment and Pneumatic Conveying Systems since 1954 has been achieved by continuous improvement, leading edge technologies, uncompromising care and attention for our employees and the environment, and great customer service.

And why is it more health & wellness and environmentally beneficial?

The finishing industry is facing a greater challenge to reduce the environmental impact of its processes than ever before. Perhaps the paramount challenge is to replace chrome plating due to its negative environmental and health effects. Due to this, chromium reduction has been a key focus of companies, the military, industry conferences, academia and legislation. Many applications have already been converted from chrome plating to other finishing operations. Because chrome is used so widely for varying purposes, it is impractical to expect to find a single replacement that will work in all applications. In applications requiring hardness and wear resistance, composite EN coatings have been even more successful in not only replacing chrome but actually surpassing the performance of hard chrome plating.

This new CEN does not have the negative health and wellness properties of Hard Chrome and is therefore more readily accepted by industry and the EPA etc.

What changes are we making to our operation and what do we see for growth?

With this new CEN hard coating process we expect to continue coating our existing production parts, for the Walinga product line. Beyond that and as the system gets on line, we intend to phase out our Hard Chrome Plating line completely. As we get established on our own products, we would like to promote our hard coating services to others in the Agricultural equipment manufacturing industry. There is considerable opportunity for adding high wear surface properties to many other products, giving us and other Canadian manufacturers a competitive edge in the North American and Global marketplace. This is expected to create growth opportunities for us as a company. The company that owns the technology has encouraged us to take on more work once established, since they have other companies asking for shops that will do this type of hard coating for them.

Walinga Inc is a family owned company and we have always prided ourselves in being innovative and make all efforts to be self-contained in our manufacturing capabilities. This gives us unique opportunities to create leading edge products and processes, as well as control over quality, delivery, and after the sale support. That is also why we pursued hard chrome back in 1980 after getting parts chromed by others for a short time and then found a system that allowed us to do the Hard Chroming work in-house. That was installed in 1981 and has served us well since. The switch to this new CEN is our next step in staying on the leading edge and ensuring that our employees and the environment have our best interests at heart.

The timelines for all this is dependent on when we get our approvals and permits. The engineering is confirmed with Accutech Engineering, and the bids have been received from the mechanical contractors for the tank ventilation system. The sooner we can get the system going the better for our team and all related beneficiaries including the environment.

May 18, 2016



Walinga Inc. – EAP

To: Environmental Approvals Branch - Manitoba Conservation and Water Stewardship

Att: Eshetu Bashada

From: Walinga Inc. - Cor Lodder (cor.lodder@walinga.com Phone 204-745-2951 x428)

Re: Environmental Act Proposal Form – Follow-up item

Why are we replacing Industrial Hard Chrome with this new “CORVOR” hard coating?

And why is it more health & wellness and environmentally beneficial?

The Environmental Benefits of Composite Electroless Nickel Coatings

Article From: Products Finishing, Michael D. Feldstein, President from Surface Technology Inc.

Posted on: 8/1/2002

Because of the negative environmental and health effects related to chromium, finishers are looking for a replacement. Composite electroless nickel coatings may be one solution...

The finishing industry is facing a greater challenge to reduce the environmental impact of its processes than ever before. Perhaps the paramount challenge is to replace chrome plating due to its negative environmental and health effects. The EPA has found chromium to potentially cause skin irritation and ulceration during short-term exposures. Long-term effects include damage to the liver, kidneys, circulatory system and nerve tissue, as well as skin damage and cancer.

In 1972, Congress passed the Clean Water Act, which protects our lakes, rivers, aquifers and coastal areas. It was amended in 1977. Under this law, most chromium limits were set by state and local environmental agencies. Under the recently proposed Metal Products and Machinery Rule (MP&M), the maximum daily limit for chromium would be 1.3 mg/liter and 0.55 mg/liter maximum monthly average. Not necessarily easy numbers to reach.

Due to this, chromium reduction has been a key focus of companies, the military, industry conferences, academia and legislation. Many applications have already been converted from chrome plating to other finishing operations. Because chrome is used so widely for varying purposes, it is impractical to expect to find a single replacement that will work in all applications.

While questions exist about the environmental ramifications of nickel, it is still clearly less problematic than chrome. For this reason, electroless nickel (EN) has been used to replace chrome in many decorative as well as functional applications, such as for corrosion and wear resistance. **In applications requiring hardness and wear resistance, composite EN coatings have been even more successful in not only replacing chrome but actually surpassing the performance of hard chrome plating.**

Composite EN coatings have codeposited particles dispersed throughout the coating layer as in Figure 1. These coatings, therefore, have all of the inherent features of electroless nickel as well as the properties of whatever particles are selected, such as hardness, wear resistance, lubricity, heat transfer, light absorption, etc. For this reason, composite EN coatings are better than chrome or any electrolytic or spray processes for non-line-of-sight applications.

Recent analysis has further demonstrated that these composite EN coatings not only have tremendous potential to replace chrome, but actually can be used to reduce nickel use and pollution as well. This interesting opportunity exists on three levels.

No Chrome Composite EN coatings use no chrome. The environmental problems inherent with plating and using chrome are therefore entirely eliminated.

Less Nickel Used

Composite EN coatings can be routinely produced with up to 40% by volume of codeposited particles. The implications are significant in four aspects:

1. Most simply, this means that at least 40% less nickel is required to produce composite coatings of equal thickness to a conventional coating without such particles.
2. Given the greater wear resistance of composite EN coatings versus conventional coatings, the deposit thickness of composite coatings can be significantly less than conventional EN coatings. This means even less nickel needs to be used.
3. As such, composite EN coatings last longer, parts will need to be recoated or replaced less frequently. Again, resulting in even less nickel used.
4. The less nickel the plating shop uses, the longer the baths will last. This means less baths required, less waste treatment and less waste.

Less Nickel Released

Concern about the release of chrome, nickel and other metals into the environment does not stop at the plating shop's door. As coatings wear, their constituents are released. Depending on the application, they can be released into work areas, food applications, sensitive assemblies and the environment as a whole. Composite EN coatings have the further advantage, therefore, of preventing the release of such metals based on the following four principles:

1. Greater wear resistance of the composite EN coatings reduces the release of the coating into the environment.
2. As the composite coating can be up to 40% inert particles, the coating released into the environment will be up to 40% less metal.
3. As parts last longer, they are not discarded into the environment as often, and less replacement parts are required.
4. Because composite EN coatings can be chemically stripped, used parts can be stripped and recoated, thereby reclaiming the nickel metal in solution form for recycling.

There is one other aspect worth considering. Chrome is often “over-plated” on parts with complicated geometries to achieve the correct deposit thickness in areas with lower current densities. Not only is this an excessive use of chrome plating, it also requires grinding the plated parts to the proper dimensional tolerances. This grinding naturally releases chrome metal into the environment. Over-plating and grinding also require additional and wasted energy consumption.

Here is a simple analogy showing that “less can be more” in performance and environmental terms. In the past, the government has required the inclusion of various additives to gasoline. These additives such as ethanol or oxygenated fuel serve to reduce the amount of gasoline used and, subsequently, the amount of gasoline released into the environment. This same principle is achieved by adding inert particles to EN plating, as well as significant performance advantages provided by the particles for hardness, wear resistance, impact resistance, lubricity, etc., depending on the particles incorporated.

Background on Composite EN

Composite EN is intriguing because it intentionally introduces insoluble particulate matter into the plating solution for codeposition into the coating. The stability ramifications to the plating bath are significant. One gram of 1.0-micron sized diamond particles, for instance, contains 310,000,000,000 particles.¹ This creates a surface area loading near 100,000 cm²/liter, approximately 800 times the preferred loading of a conventional EN bath.²

This natural incompatibility between an inherently unstable, surface-area-dependent plating bath and an extraordinary loading of insoluble particles has been overcome by the precise addition of particulate matter stabilizers or PMSs.³ The methods disclosed therein have made composite EN plating reliable and commercially viable by modifying the Zeta potential of particles in a plating system. Zeta potential is an effect of electrostatic charge. A wide variety of particulate matter is capable of codeposition in EN coatings. In each instance, the plating bath must be modified to accept the specific particles and produce an optimal coating.

Composite EN coatings are regenerative because of the uniform manner with which the particles are dispersed throughout the entire plated layer, as observable in the cross sectional

Figure 1. Particle matter suitable for composite EN incorporation can be from nanometers up to approximately 10 microns in size. A narrow particle size range is specified for each application. Certain performance benefits have been discovered when a composite coating is generated simultaneously using two distinct particle sizes. It is theorized that the smaller particles fill the spaces between the larger particles.⁴ This also further increases the percent by volume of the particulate matter and further reduces the amount of nickel used.

Coating thickness specifications are typically set on a value between 10 and 25 microns (0.0005 -0.001 inch) for most applications. Very tight coating thickness specifications can be established for particular applications and routinely reproduced within a few microns by the plating shop. As with conventional EN, composite EN coatings can be heat treated after plating to enhance their hardness and adhesion to the substrate.

Depending on the particle sizes and certain plating conditions, coatings can be produced with a particle density of up to 40% by volume. Lesser densities may not provide the maximum benefit available from the particulate matter, and significantly higher densities risk premature wear of the coating since there may not be enough of the metal “glue” to prevent the particles from being removed. This observation indicates that the typical wear mechanism of composite EN coatings is not wear to the particles themselves, but rather wear to the surrounding metal matrix that eventually allows the particles to be removed.

To date, coatings designed for increased wear resistance have proven to be the most widely used composite EN coatings. As this category of composite EN coatings has the greatest potential to replace and surpass hard chrome plating, and provide the health and environmental benefits presented above, we will focus on this category. Within the wear-resistance category, an extensive array of suitable particles can be used, including diamond, silicon carbide, aluminum oxide, tungsten carbide, boron carbide and chromium carbide. These materials differ not only in hardness and wear resistance but also in their shape. Any of these factors can affect surface and performance characteristics.

Table I⁵ includes hardness measurements for various materials and coatings. Due to the mechanism of standard indentation hardness testing, true hardness evaluation of composite EN coatings is a bit elusive. Because of this limitation of the test method, and that such coatings are primarily employed for wear resistance (a feature not necessarily directly correlated to hardness), a review of various wear resistance testing is more useful. It should be noted, however, that standardized wear testing methods are instructive but cannot substitute for controlled testing of various composites under the actual intended use conditions.

Various test methods have been employed to evaluate wear resistance of different materials and coatings. Perhaps the most common test method is the **Taber abrasive wear test**. In the Taber test method, a coated panel turns under two rotating abrasive wheels. Wear is measured as the weight loss of the panels following a specified number of rotating cycles. The lower the

wear index, the lower the wear to the coating. The coatings and materials in Table II⁶ were tested by 1,000 cycles on the Taber test device.

Table III⁷ presents Taber abrasion test results for Nano-PlateTM 150 (a composite electroless nickel deposit with nano-sized diamond particles) and hard chrome plating. These results are based on an extensive test of 10,000 cycles.

Other test methods also demonstrate the enhanced wear resistance of composite EN coatings in comparison to hard chrome plating. It is instructive to see the performance of materials under various wear conditions. Figure 2⁸ includes the results of the Yarnline Abrasive Wear Test, where an abrasive yarnline under constant tension is drawn across a material sample at a constant speed and force. Results are measured in material removal over time as cu mil per hour and show the dramatic difference between hard chrome plating and a composite EN coating with silicon carbide particles.

Composite EN coatings can offer excellent wear resistance and hardness compared to hard chrome plating. Other application and performance benefits of composite EN coatings over hard chrome plating have also been presented. Composite EN coatings are available to replace and perhaps surpass hard chrome plating. There are significant health and environmental benefits created by the elimination of chrome. As composite EN coatings can be reliably produced with up to about 40% by volume of codeposited particles, such coatings further have the ability to reduce the amount of nickel used and released into the environment.

References

1. Mypolex Micropolycrystalline Diamond Powder, E.I. DuPont de Nemours & Company, Inc., page 17.
 2. Feldstein, N.; Lancsek, T.; Lindsay, D; Salerno, L.; Electroless Composite Plating; Metal Finishing, August, 1983, pgs. 35-51.
 3. U.S. Patents 4,997,686, 5,145,517, 5,300,330, and 5,863,616.
 4. U.S. Patents 4,547,407 and 4,906,532.
 5. N. Feldstein, Composite Coatings, Materials Engineering, Cleveland, Ohio, (1981).
 6. N. Feldstein, Composite Coatings, Materials Engineering, Cleveland, Ohio, (1981).
 7. "Composite Electroless Coatings with Nanometer Diamond Particles", Michael Feldstein, Nanomaterials Workshop, December 11, 2002.
 8. N. Feldstein, Composite Coatings, Materials Engineering, Cleveland, Ohio, (1981)
-

MATERIAL SAFETY DATA SHEET

Section 1 Product Identification

MANUFACTURER: UNITECH LUBRICANTS AMERICA INC.
ADDRESS: 605 COLBY DRIVE
 WATERLOO, ON, N2V 1A1

EMERGENCY PHONE NUMBER: 519-884-9209 (Mon-Fri: 8am-5pm)

PRODUCT NAME: HOSMAC-S 5035 CA

PRODUCT TYPE: Water-miscible metal working coolant

PREPARED BY: OH&S Coordinator

DATE OF ISSUE: November 15, 2011

SUPERCEDES:

Section 2 Product Composition/Information on Ingredients

INGREDIENT:	% wt	CAS NO:	LC/50 & LD/50 Route, Species
Severely Hydrotreated Petroleum Oil	30-40	64742-52-5	See Section 11
Ethoxylated Fatty Alcohol	1-5	37335-03-8	N.Av.

Section 3 Hazards Identification

Routes of entry:

Skin Contact..... Prolonged contact may cause slight irritation with itching and local redness

Skin Absorption..... No evidence of harmful, effects from available information

Eye Contact..... May cause irritation, experience as stinging with blinking and tear production. Excess redness and swelling may occur.

Inhalation..... Mist may cause irritation of the nasal and respiratory tract.

Ingestion..... Signs and symptoms may include pain or discomfort in the mouth, throat, chest and abdomen.

Effects of acute exposure..... Prolonged or frequent contact may cause skin and eye irritation. Inhalation of mists/vapors may cause respiratory irritation.

Effects of chronic exposure..... Not Determined

Section 4 First Aid Measures

Instructions.....

Eye Contact. Flush eyes with large amounts of running water for at least 15 min. Hold eyelids apart to ensure rinsing of the entire surface of the eye and lids with water. Remove any contact lenses. Seek medical attention.

Inhalation. In case of inhalation, remove to fresh air. Aid in breathing, if necessary. Consult a physician.

Skin Contact. Remove any contaminated clothing and wash affected area with plenty of soap and water. If irritation persists, get medical attention.

Ingestion. Never give anything by mouth if the victim is unconscious. Do not induce vomiting without medical advise. Consult a physician.

Section 5 Fire Fighting Measures

Flammability.....	Combustion can be induced by high-energy source. See Flash Point
Extinguishing Media.....	All purpose foam, carbon dioxide, dry chemical media, sand or earth
Special Procedures.....	Do not spray water or foam directly into burning material, as spattering may occur which can spread the fire. Wear full protective equipment including a self-contained breathing apparatus.
Flash Point (C), Method.....	>170C
Auto Ignition Temperature.....	N.D.
Upper flammable limit (% by vol.)	Not Established
Lower flammable limit (% by vol.)	Not Established
Explosion Data	
Explosive Power.....	Not Applicable
Rate of Burning.....	N.Av.
Sensitivity to static.....	N.Av.
Sensitivity to impact.....	Not Applicable
Unusual fire and explosion.....	During a fire, oxides of nitrogen and carbon may be evolved
Hazardous combustion products....	Burning can produce, carbon monoxide is highly toxic if inhaled; carbon dioxide in sufficient concentrations can act as an asphyxiant. Oxides of carbon and nitrogen. Trace oxides of sulfur. Acute overexposure to the products of combustion may result in irritation of the respiratory tract.

Section 6 Accidental Release Measures

Leak/Spill.....	As with any other industrial lubricating oils, use oil-binding agents. Spills or leaks may cause slippery conditions. Small Spills: Soak in absorbent granules or sand and dispose according to all applicable Federal, State and Local regulations. Large Spills: Bind using absorbent granules, sand or earth. Reclaim liquid directly or soak in an absorbent medium, and transfer to a suitable, marked container. This product is non-hazardous waste when spilled or disposed of, as defined in Resource Recovery Act (RCRA) regulations (40 CFR 261). Dispose according to all applicable Federal, State and Local regulations.
-----------------	--

Section 7 Handling and Storage

Handling procedure and equipment.....	Do not swallow. Avoid contact with, skin, and clothing. Wear protective equipment during handling. Use adequate ventilation. Maintain a good personal hygiene. Wash thoroughly after handling. Recommend proper scheduled machine sump cleanings to minimize exposure to bacterial contaminants (i.e. removal of tramp oils and metal fines etc.). Mild skin irritation may be experienced when the diluted product has been contaminated by certain oils by dissolved metals, or when mix ratio is too strong. When problems occur, use of water-resistant barrier creams may be a temporary control measure. Contact Lubricor for specific recommendations.
Storage needs.....	Keep away from incompatible materials. If frozen thaw and mix before sampling or using. Keep container tightly closed when not in use. Store in dry conditions protected from frost and elevated temperature. Avoid heat and sources of ignition. Store in original container or other mild steel or high-density polyethylene containers, which are closable and clearly labeled.

Section 8 Exposure Controls/Personal Protection

Gloves/Type.....	Impervious gloves, such as nitrile gloves are recommended when handling product concentrate
Respiratory/Type.....	In applications where time-weighted exposures are 0.5 to 5 mg/m ³ , mist reduction through improved ventilation, mist collection or process modification is recommended by NIOSH. Where this is not possible, NIOSH recommends the use of any air purifying, half-mask respirator including disposable respirator equipped with any P or R series particulate filter. If the average exposure will exceed 5 mg/m ³ , NIOSH recommends use of a powered, air-purifying respirator equipped with a hood or helmet and a HEPA filter. If respiratory problems are present when mist levels are < 0.5 mg/m ³ , respiratory protection should be based on the individual recommendation of a qualified health care provider.
Eye/Type.....	Mono-goggles or safety glasses recommended
Footwear/Type.....	Chemical resistant boots
Clothing/Type.....	Wear an apron and/or an overall
Other/Type.....	Eye bath
Engineering Controls.....	Engineered controlled enclosure/local exhaust. When no ventilation recommend R or P (P95) respirator. When used in applications generating high levels of mist, operator exposure can be minimized by proper ventilation, use of mist collectors or splashguards as appropriate. If there is doubt about actual mist levels present, monitoring should be conducted
Additional Information.....	Adopt normal good working practices and personal hygiene standards. Wash hands after use, before eating, drinking, or smoking, and before and after using the toilet. Contaminated clothing should be laundered before re-use.

Section 9 Physical and Chemical Properties

Physical State.....	Amber liquid
Odor.....	Mild pleasant odor
Odor Threshold.....	N.Av.
Vapor Pressure (mmHg).....	N.D.
Vapor Density (Air =1).....	N.D.
Evaporation Rate.....	N.D.
Freezing Point.....	<0C
Molecular wt.....	N.Ap.
Percent Volatile.....	N.D.
Boiling Point.....	> 100 C
pH.....	9.8 @ 5% Fresh Charge
Specific Gravity.....	0.95 @ 20C
Solubility in water.....	Complete
Coefficient of water/oil dist.....	N.D.

Section 10 Stability and Reactivity

Chemical Stability	Stable under normal conditions.
Conditions to avoid.....	Use as directed.
Materials to avoid.....	Oxidizing agents (i.e. chlorates, peroxides), strong acids, and strong bases.
Hazardous products of decomposition	See hazardous combustion products.
Hazardous polymerization.....	Will not occur.

Section 11 Toxicological Information

Routes of Entry.....	Ingestion. Skin and eye contact. Inhalation if mists, vapor or airborne particulates are generated.
Effects of Acute Exposure.....	Inhalation: The product is unlikely to present any significant inhalation hazard at ambient temperatures. Ingestion: The product has a low order of acute oral toxicity – ingestion is not regarded as a significant health hazard likely to arise in normal use. Swallowing significant quantities may cause discomfort, nausea, irritation of digestive tract, and diarrhea
Effects of Chronic Exposure.....	There are no reports of long-term adverse toxic effects in man attributable to the use of this type of product.
LD50 of Material.....	64742-53-6 N.Av.
LC50 of Material.....	64742-53-6 N.Av.
Carcinogenicity of Material.....	No effects are known from the use of this type of product
Reproductive Effects.....	No effects are known from the use of this type of product
Irritancy of Material.....	Eyes: Eye contact can cause strong irritation and stinging. Skin: The product may cause irritation in contact with the skin. This may become more intense if the material is not promptly removed or if contact is frequent or prolonged.
Sensitizing capability of Material...	None expected
Tetratogenicity.....	N.D.
Mutagenicity.....	N.D.
Other Information.....	N.Av.
Additional comments.....	None
Synergistic Materials.....	N.D.
Exposure Limits.....	OSHA regulation 29 CFR 1910.1000 establishes an exposure limit for oil mist in air. The applicability of this exposure limit to emulsions has not been established. OSHA 29 CFR 1910.1000 of oil mist in air: 5mg/m ³ ACGIH: TLV for oil mist in air: 5mg/m ³ NIOSH REL Metalworking fluid mist: 0.5 mg/m ³

Section 12 Ecological Considerations

Ecotoxicity.....	N.Av.
Environmental Fate.....	N.Av.

Section 13 Disposal Considerations

Waste Disposal.....	Wastes must be tested using methods described in 40 CFR 261 to determine if it meets applicable definitions of hazardous waste. No EPA waste numbers are applicable for this product's components. Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.
---------------------	--

Section 14 Transportation Information

Dot Classification.....	Not a DOT controlled material
Proper Shipping Name.....	Not regulated by this mode of transportation
TDG Classification.....	Not Regulated
UN Number	Not Applicable
DOT Identification Number.....	None
Packing Group.....	None
Hazardous Substances Reportable Quantity.....	N.Av.
Special Provisions for Transportation.....	None
Additional Shipping Information...	N.D.
International Transportation Regulations.....	N.D.

Section 15 Regulatory Information

Federal and State Regulations ...	OSHA: Not hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200) SARA TITLE III SARA Section 302 (40 CFR 355 Appendix A): None of this product's components are listed; SARA Section 311/312: None; SARA Section 313 (40 CFR 372.65) None of this product's components are listed; CERCLA (40 CFR 302.4) None of the product's components are listed; RCRA: Not Listed TSCA Inventory: All of this product's components are listed. International Inventories: All of this product's components are on or exempt from these inventories: Canada DSL, EINECS, Australia, Japan, China, Korea, and the Philippines. State Lists: None of this products components are listed in CA, FL, MA, MN, NJ, or PA The content of this Hydrosol 5035NH is not classified as hazardous material, dangerous goods, prohibited or restricted articles by IATA This product does not contain any chemicals currently on the California List of Known Carcinogens and Reproductive Toxins
WHMIS Classification.....	D2B
CPR Compliance.....	Yes

HOSMAC-S 5035 CA has been classified in accordance to the controlled product regulation and the MSDS contains all the information required by the CPR.

HOSMAC-S 5035 CA does not contain any ingredients listed on the SARA Title III, Section 313 List of Chemicals. HOSMAC-S 5035 CA, as sold, does not meet the criteria of a hazardous waste as defined under 40CFR 261, in that it does not exhibit the characteristics of a hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D. It is the end user's responsibility to determine the regulatory status of the waste at the time of disposal.

Section 16 Other Information

Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists
ANSI = American National Standards Institute
ASTM = American Society for Testing and Materials
CERCLA = Comprehensive Environmental Response and Liability Act
DOT = Department of Transportation
EPA = Environmental Protection Agency
IARC = International Agency for Research on Cancer
LD = Lethal Dose
NIOSH = National Institute of Occupational Health and Safety
NTP = National Toxicology Program
OSHA = Occupational Safety and Health Administration
PEL = Permissible Exposure Limit
SARA = Superfund Amendments and Reauthorization Act
TLV = Threshold Limit Value
TSCA = Toxic Substance Control Act
N.D. = Not Determined
N.Av. = Not Available
N.Ap. = Not Applicable

ALL STATEMENTS, INFORMATION AND DATA PROVIDED IN THIS MSDS ARE BELIEVED TO BE ACCURATE AND RELIABLE. THIS INFORMATION IS PRESENTED WITHOUT GUARANTEE OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION FOR THEIR PURPOSE. NOTHING IS INTENDED AS PERMISSION INDUCEMENT TO VIOLATE ANY LAWS. SELLER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE OR LIABILITY RESULTING FROM THE USE OF THE PRODUCT IN THE BUYER'S MANUFACTURING PROCESS OR IN COMBINATION WITH OTHER SUBSTANCES.

Material Safety Data Sheet

HYDREX™ XV ALL SEASON



000003001240

Version 3.0

Revision Date 2015/10/05

Print Date 2015/10/05

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : HYDREX™ XV ALL SEASON

Product code : HDXASICT, HDXASP5R, HDXASP20, HDXASIBC,
HDXASDRR, HDXASDRM, HDXASDCT, HDXASC16,
HDXAS, HDXASBLK

Manufacturer or supplier's details

Petro-Canada Lubricants Inc.
2310 Lakeshore Road West
Mississauga ON L5J 1K2
Canada

Emergency telephone number : Suncor Energy: +1 403-296-3000;
Poison Control Centre: Consult local telephone directory for
emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : Hydrex XV All Season hydraulic oil is a premium hydraulic oil designed for year round use in hydraulic systems that are exposed to wide temperature extremes. It is specifically recommended for woodland, mining, construction, public utility and marine operations eliminating the need for seasonal changeovers.

Prepared by : Product Safety: +1 905-804-4752

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	viscous liquid
Colour	Bright, pale yellow.
Odour	Mild petroleum oil like.

Potential Health Effects

Primary Routes of Entry : Eye contact
Ingestion
Inhalation
Skin contact

Aggravated Medical Condition : None known.

Carcinogenicity:

IARC

No component of this product present at levels greater than or

Material Safety Data Sheet

HYDREX™ XV ALL SEASON

000003001240

Version 3.0

Revision Date 2015/10/05

Print Date 2015/10/05



equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical Name	CAS-No.	Concentration (%)
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	30 - 50 %

SECTION 4. FIRST AID MEASURES

- If inhaled : Artificial respiration and/or oxygen may be necessary.
Move to fresh air.
Seek medical advice.
- In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash skin thoroughly with soap and water or use recognized skin cleanser.
Wash clothing before reuse.
Seek medical advice.
- In case of eye contact : Remove contact lenses.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Obtain medical attention.
- If swallowed : Rinse mouth with water.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Never give anything by mouth to an unconscious person.
Seek medical advice.
- Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

SECTION 5. FIREFIGHTING MEASURES

Material Safety Data Sheet

HYDREX™ XV ALL SEASON

000003001240



Version 3.0

Revision Date 2015/10/05

Print Date 2015/10/05

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : No information available.
- Specific hazards during firefighting : Cool closed containers exposed to fire with water spray.
- Hazardous combustion products : Carbon oxides (CO, CO₂), smoke and irritating vapours as products of incomplete combustion.
- Further information : Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Material can create slippery conditions.
- Environmental precautions : Do not allow uncontrolled discharge of product into the environment.
- Methods and materials for containment and cleaning up : Prevent further leakage or spillage if safe to do so.
Remove all sources of ignition.
Soak up with inert absorbent material.
Non-sparking tools should be used.
Ensure adequate ventilation.
Contact the proper local authorities.

SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Use only with adequate ventilation.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid contact with skin, eyes and clothing.
Do not ingest.
Keep away from heat and sources of ignition.
Keep container closed when not in use.
- Conditions for safe storage : Store in original container.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep in a dry, cool and well-ventilated place.
Keep in properly labelled containers.
To maintain product quality, do not store in heat or direct sunlight.

Material Safety Data Sheet

HYDREX™ XV ALL SEASON

000003001240

Version 3.0

Revision Date 2015/10/05

Print Date 2015/10/05



SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	TWA (Mist)	5 mg/m ³	CA AB OEL
		STEL (Mist)	10 mg/m ³	CA AB OEL
		TWAEV (Mist)	5 mg/m ³	CA QC OEL
		STEV (Mist)	10 mg/m ³	CA QC OEL
		TWA (Mist)	1 mg/m ³	CA BC OEL
		TWA (Inhalable fraction)	5 mg/m ³	ACGIH

Engineering measures : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type : organic vapour filter

Hand protection
Material : neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R).

Remarks : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eye protection : Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Protective measures : Wash contaminated clothing before re-use.
No special protective equipment required.

Hygiene measures : Remove and wash contaminated clothing and gloves, including the inside, before re-use.
Wash face, hands and any exposed skin thoroughly after handling.

Material Safety Data Sheet

HYDREX™ XV ALL SEASON

000003001240

Version 3.0

Revision Date 2015/10/05

Print Date 2015/10/05



SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: viscous liquid
Colour	: Bright, pale yellow.
Odour	: Mild petroleum oil like.
Odour Threshold	: No data available
pH	: No data available
Pour point	: -48 °C (-54 °F)
Boiling point/boiling range	: No data available
Flash point	: 227 °C (441 °F) Method: Cleveland open cup
Fire Point	: No data available
Auto-Ignition Temperature	: No data available
Evaporation rate	: No data available
Flammability	: Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available
Density	: 0.8488 kg/l (15 °C / 59 °F)
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: 47.9 cSt (40 °C / 104 °F) 9.67 cSt (100 °C / 212 °F)
Explosive properties	: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: Hazardous polymerisation does not occur. Stable under normal conditions.
------------------------------------	---

Material Safety Data Sheet

HYDREX™ XV ALL SEASON

000003001240



Version 3.0

Revision Date 2015/10/05

Print Date 2015/10/05

Conditions to avoid : No data available

Incompatible materials : Reactive with oxidising agents and reducing agents.

Hazardous decomposition products : May release CO_x, H₂S, metal oxides, methacrylate monomers, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : Eye contact
Ingestion
Inhalation
Skin contact

Acute toxicity

Product:

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

Components:

lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based:

Acute oral toxicity : LD50 Rat: > 5,000 mg/kg,

Acute inhalation toxicity : LC50 Rat: > 5.2 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 Rabbit: > 2,000 mg/kg,

Skin corrosion/irritation

Product:

Remarks: No data available

Serious eye damage/eye irritation

Product:

Remarks: No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

Material Safety Data Sheet

HYDREX™ XV ALL SEASON

000003001240



Version 3.0

Revision Date 2015/10/05

Print Date 2015/10/05

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Aspiration toxicity

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil. Offer surplus and non-recyclable solutions to a licensed disposal company. Waste must be classified and labelled prior to recycling or disposal.

Material Safety Data Sheet

HYDREX™ XV ALL SEASON

000003001240

Version 3.0

Revision Date 2015/10/05

Print Date 2015/10/05



Send to a licensed waste management company.
Dispose of as hazardous waste in compliance with local and national regulations.
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulation

IATA-DGR

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

49 CFR

Not regulated as a dangerous good

TDG

Not regulated as a dangerous good

Special precautions for user

Not applicable

SECTION 15. REGULATORY INFORMATION

WHMIS Classification : Not controlled.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

The components of this product are reported in the following inventories:

DSL

On the inventory, or in compliance with the inventory

TSCA

All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.

IECSC

On the inventory, or in compliance with the inventory

EINECS

On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

For Copy of (M)SDS : The Canadian Controlled Products Regulations (CPR) (Under the Hazardous Products Act, part of the WHMIS legislation) only apply to WHMIS Controlled (i.e., hazardous) products. Therefore, the CPR and the 3-year update rule specified therein do not apply to WHMIS Non-Controlled products. Although this is true, customarily Petro-Canada reviews and updates Non-Controlled product MSDS if a customer requests such an update. These Non-Controlled product updates are

Material Safety Data Sheet

HYDREX™ XV ALL SEASON

000003001240

Version 3.0

Revision Date 2015/10/05

Print Date 2015/10/05



given a lower priority than Controlled products but are handled as soon as practicable. If you would like to verify if the MSDS you have is the most current, or you require any further information, please contact:

Internet: lubricants.petro-canada.ca/msds

Western Canada, telephone: 1-800-661-1199; fax: 1-800-378-4518

Ontario & Central Canada, telephone: 1-800-268-5850; fax: 1-800-201-6285

Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 1-800-201-6285

For Product Safety Information: 1 905-804-4752

Prepared by : Product Safety: +1 905-804-4752

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.



MATERIAL SAFETY DATA SHEET

Print date: 15-May-2014

Version 8

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product name: HEEF 25 RS CHROMIUM SALT
Product code: 1472182

Synonyms: No information available

Relevant identified uses of the substance or mixture and uses advised against

Use: Chemical plating of metals

Uses advised against Uses advised against Consumer Use

Supplier:	ATOTECH USA INC 1750 OVERVIEW DRIVE ROCK HILL, SC 29730 TELEPHONE: 803-817-3500 MONDAY - FRIDAY HOURS: 8:00am - 5:00pm EST	ATOTECH CANADA LTD. 1180 CORPORATE DRIVE BURLINGTON, ON., L7L 5R6 TELEPHONE: 905-332-0111 MONDAY - FRIDAY HOURS: 8:00am - 4:30pm EST
------------------	---	---

Emergency telephone numbers:

SPILLS AND TRANSPORT	CHEMTREC (USA): 800-424-9300 CANUTEC (CANADA): 613-996-6666
TRANSPORT MEDICAL	ROCKY MOUNTAIN POISON CONTROL CENTER: 303-623-5716

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Danger
Oxidizer
Corrosive
Toxic
Carcinogenic

This material is considered to be hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
 This material is a controlled product under WHMIS.

Potential health & environmental effects

Properties affecting health: Corrosive effects. Toxic if swallowed. Toxic in contact with skin. Toxic by inhalation.

Principle routes of exposure: Eyes. Skin. Respiratory system. Gastrointestinal tract.

Skin contact: Corrosive. Contact causes severe skin irritation and possible burns. Also toxic in contact with skin. Large exposures may be fatal. May cause sensitization by skin contact.

Eye contact: Corrosive to the eyes and may cause severe damage including blindness.

- Inhalation:** Corrosive. Causes severe burns. Also very toxic by inhalation. Causes inflammation and ulceration of the respiratory tract. May cause sensitization by inhalation.
- Ingestion:** Corrosive. Ingestion causes burns of the upper digestive and respiratory tracts. Toxic if swallowed. Liver and kidney injuries may occur.
- Physico-chemical properties:** Contact with combustible material may cause fire.
- Potential environmental effects:** Dangerous for the environment Toxic to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

Description: Mixture of organic and inorganic salts

INGREDIENTS (BY WEIGHT PERCENT)

Components	CAS-No	Weight %
Chromium trioxide	1333-82-0	60 - 100
Sodium sulfate	7757-82-6	< 0.1

This product may contain component (s) that are not listed under disclosure. All components not listed, do not contain hazardous materials above deminimus disclosure limits as defined by OSHA, NIOSH, ACGIH or Canadian WHMIS regulations and or guidelines. Please refer to other sections of the MSDS for information on safety, health and environmental guidelines and precautions.

4. FIRST AID MEASURES

- General advice:** Immediate medical attention is required.
- Skin contact:** Wash off immediately with plenty of water for at least 15 minutes. Call a physician or Poison Control Centre immediately. Remove and wash contaminated clothing before re-use.
- Inhalation:** Move to fresh air. Artificial respiration and/or oxygen may be necessary. Immediate medical attention is required.
- Eye contact:** Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.
- Ingestion:** Call a physician or Poison Control Center immediately. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.
- Notes to physician:** Overexposure to this product could lead to kidney failure and death. It has been reported that there is little value from chelating agents; however death has been avoided in several such cases through the use of early renal dialysis. Ascorbic acid by mouth or intravenously has been shown to be effective (converting Chrome VI to Chrome III) in preventing renal tubular failure. Continue to monitor for respiratory distress for 72 hours.
- Protection of first-aiders:** Use personal protective equipment.

5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media:** Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Extinguishing media which must not be used for safety reasons:** DO NOT use combustible materials such as sawdust.
- Special protective equipment for fire-fighters:** Standard procedure for chemical fires. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Use personal protective equipment.

Special hazards arising from the substance or mixture:	In case of fire hazardous decomposition products may be produced such as, chromium oxides, Oxygen, Contact with combustible material may cause fire.
Unusual hazards:	Containers may explode when involved in fire. Chromic acid reacts strongly with materials which are readily oxidized. Do not allow run-off from fire fighting to enter drains or water courses. Water runoff can cause environmental damage. Corrosive. Toxic. May cause or intensify fire; oxidizer.
Specific methods:	Water mist may be used to cool closed containers. Dike and collect water used to fight fire. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Flash Point:	The product is not flammable
Flash point test method:	Not applicable.
Autoflammation temperature:	Not applicable
Flammability Limits in Air:	
Lower:	Not applicable.
Upper:	Not applicable.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:	Avoid contact with skin, eyes and clothing. Prevent unauthorized access. For personal protection see section 8.
Environmental precautions:	Should not be released into the environment. Prevent product from entering drains. Do not flush into surface water or sanitary sewer system.
Methods for containment:	Prevent further leakage or spillage if safe to do so.
Methods for cleaning up:	Avoid formation of aerosol. Do not allow to dry. DO NOT use combustible materials such as sawdust. Soak up with inert absorbent material. Clean contaminated surface thoroughly. Use approved industrial vacuum cleaner for removal. Keep in suitable, closed containers for disposal. Dispose of in accordance with local regulations.

7. HANDLING AND STORAGE

Handling

Technical measures/precautions:	Use only in area provided with appropriate exhaust ventilation.
Safe handling advice:	Do not breathe vapors/dust. Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Do not ingest. For personal protection see section 8.

Storage

Technical measures/storage conditions:	Keep containers tightly closed in a dry, cool and well-ventilated place. Do not store near combustible materials. Keep locked-up.
Incompatible products:	See chapter: 10.
Shelf Life (days):	730

Storage Temperature

Keep above: 23 °F / -5°C
Keep below: 104 °F / 40°C

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures to reduce exposure:	Ensure adequate ventilation, especially in confined areas.
---	--

Individual protection measures

Respiratory protection:

In case of insufficient ventilation wear suitable respiratory equipment. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. .

Hand protection:

Wear protective gloves. The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

Skin and body protection:

Chemical resistant apron. Long sleeved clothing. Boots.

Eye protection:

Tightly fitting safety goggles. Face-shield. Ensure that eyewash stations and safety showers are close to the workstation location.

Hygiene measures:

Avoid contact with skin, eyes and clothing. Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke.



Exposure limits	ACGIH			OSHA			NIOSH		
	TWA	STEL	Ceilings	TWA	STEL	Ceilings	TWA	STEL	Ceilings
Chromium trioxide 1333-82-0	0.05 mg/m ³	-	-	5 µg/m ³	-	0.1 mg/m ³	0.001 mg/m ³	-	-
Sodium sulfate 7757-82-6	-	-	-	-	-	-	-	-	-

9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Solid	Color:	Red Brown to Violet
Odor:	Odorless	Specific gravity:	2.65 - 2.75
pH:	0 - 1	Boiling point:	> 212 °F (> 100 °C)
Melting point:	Not applicable.	Evaporation rate:	Not applicable.
Vapor density:	Not applicable.	Vapor pressure:	ca. 23 hPa
Water solubility:	Soluble	Solubility in other solvents:	No information available

Flash Point:	The product is not flammable	Flash point test method:	Not applicable.
Autoignition temperature:	Not applicable	Decomposition temperature:	Not applicable

Explosion limits:
Upper: Not applicable
Lower: Not applicable

VOC Content(%)**: 0%

** CAA (Clean Air Act) - Volatile Organic Components (VOCs)

10. STABILITY AND REACTIVITY

Stability: Stable under recommended storage conditions.

Materials to avoid: Readily oxidizable or combustible material. Metals. Bases. Cyanides. Combustible material.

- Conditions to avoid:** To avoid thermal decomposition, do not overheat. Incompatible products. Extremes of temperature and direct sunlight. Keep away from open flames, hot surfaces and sources of ignition. Do not allow to dry.
- Hazardous decomposition products:** In case of fire hazardous decomposition products may be produced such as, Chromium oxides, Carbon oxides, sulfur oxides.
- Polymerization:** None under normal processing.
- Hazardous reactions:** Gives off hydrogen by reaction with metals. Exothermic reaction. Explosive when mixed with combustible material.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Components	LD50/oral/rat	LC50/inhalation/rat	LD50/dermal/rabbit
Chromium trioxide - 1333-82-0	50 mg/kg	0.167 mg/L 4h	20 mg/kg
Sodium sulfate - 7757-82-6	10000 mg/kg	No information available	No information available

Product Information

LC50/inhalation/rat = No information available
 LD50/dermal/rabbit = No information available
 LD50/oral/rat = 51 mg/kg

Local effects

- Skin contact:** Corrosive. Causes burns. Toxic in contact with skin.
- Eye contact:** Corrosive to the eyes and may cause severe damage including blindness. Liquid causes severe inflammation of conjunctiva and may cause severe damage of the cornea.
- Inhalation:** Corrosive. Inhaled corrosive substances can lead to a toxic edema of the lungs. Causes inflammation and ulceration of the respiratory tract. Toxic by inhalation.
- Ingestion:** Corrosive. Ingestion causes burns of the upper digestive and respiratory tracts. Toxic if swallowed. May be fatal if swallowed.
- Sensitization** May cause sensitization by inhalation and skin contact.

Chronic toxicity

Chronic effects: Repeated inhalation of chromic acid causes nasal perforation, skin ulceration, chronic rhinitis, pharyngitis, kidney and liver damage, inflammation of the larynx, changes in the blood and lung cancer. Carcinogenic effects caused by chromic acid and by alkaline or alkaline earth chromates and dichromates as well as zinc chromate. This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Specific effects

- Carcinogenic effects:** The National Toxicology Program (NTP) has designated Hexavalent Chromium Compounds as Known Human Carcinogens. The International Agency for Research on Cancer (IARC) has identified Hexavalent Chromium Compounds as Carcinogenic to Humans (group 1). The American Conference of Governmental Industrial Hygienists (ACGIH) has identified Water-Soluble Hexavalent Chromium Compounds as Confirmed Carcinogens.
- mutagenic effects** Mutagenic Category 1 May cause genetic defects
- Reproductive toxicity:** May impair fertility
- Target organ effects:** Skin. Eyes. Respiratory system. Kidney. Liver.

Carcinogenic substances

Components	NTP	IARC	OSHA	ACGIH	California Proposition 65 - Carcinogens
Chromium trioxide	X	1	X	X	X
Sodium sulfate	-	-	-	-	

12. ECOLOGICAL INFORMATION

Environmental hazard

- Toxicity:** No data is available on the product itself.
- Aquatic toxicity:** Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
- Mobility:** This product is soluble in water. Chromium may be transported from soil through runoff and leaching of water and through aerosol formation. The organic matter present in soil is expected to reduce soluble chromate to insoluble chromic oxide.
- Bioaccumulative potential:** Bioaccumulation from soil to above ground parts of plants is unlikely. There is no evidence of accumulation in animals.

Components	Freshwater Algae	Freshwater Fish Species
Chromium trioxide - 1333-82-0	-	96 h LC50 (Colisa fasciatus) = 40 mg/L
Sodium sulfate - 7757-82-6	-	96 h LC50 (Lepomis macrochirus) = 13 mg/L 24 h LC50 (Pimephales promelas) = 13500 mg/L

Components	Microtoxicity	Water Flea
Chromium trioxide 1333-82-0	-	0.162 mg/l
Sodium sulfate 7757-82-6	-	48 h EC50 = 2564 mg/L 96 h EC50 = 4547 mg/L

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products: Dispose of in accordance with local regulations.

Contaminated packaging: Empty containers should be taken for local recycling, recovery or waste disposal.

14. TRANSPORT INFORMATION

DOT (USA)

UN-No (DOT): UN1463
 Proper shipping name DOT: CHROMIUM TRIOXIDE ANHYDROUS, MIXTURE
 Hazard Class (DOT): 5.1
 Subsidiary Class (DOT): 8,6.1
 Packing group (DOT): II
 Description (DOT): CHROMIUM TRIOXIDE ANHYDROUS, MIXTURE , 5.1(8,6.1), UN1463, PGII

TDG (Canada)

UN-No (TDG): UN1463
 Proper shipping name TDG: CHROMIUM TRIOXIDE ANHYDROUS, MIXTURE
 Hazard Class (TDG): 5.1
 Subsidiary Class (TDG): 8, 6.1
 Packing group (TDG): II
 Description (TDG): CHROMIUM TRIOXIDE ANHYDROUS, MIXTURE , 5.1(8, 6.1), UN1463, PGII, (TOXIC)

15. REGULATORY INFORMATION

International Inventories

All of the components in this product are on or exempt from the following inventories:

USA (TSCA), CANADA (DSL / NDSL), Europe (EINECS/ELINCS/NLP), Australia (AICS), Korea (ECL), China (IECSC), Japan (ENCS).

US Additional Information

No information available

International Inventory Legend

- TSCA: US - Toxic Substance Control Act
- DSL: Canada - Domestic Substance List
- NDSL: Canada - Non-Domestic Substance List
- IECSC: China - Inventory of Existing Chemical Substances China
- EINECS: EU Inventory of Existing Commercial Chemical Substances
- ELINCS: EU List of Notified Chemical Substances
- ECL: Korea - Existing Chemicals List
- AICS: Australia - Inventory of Chemical Substances
- ENCS: Japan - Existing and New Chemical Substances
- PICCS: Phillipines - Inventory of Chemicals and Chemical Substances

US Federal Regulations:

Components	SARA 302	SARA 313	CERCLA RQ	TSCA 12(b)	CWC	DEA	CCL
Chromium trioxide	-	X	-	X	-	-	-
Sodium sulfate	-	-	-	-	-	-	-

SARA 311	
Acute Health Hazard	YES
Chronic Health Hazard	YES
Fire Hazard	NO
Sudden Release of Pressure Hazard	NO
Reactive Hazard	NO

US State Regulations:

Product name: HEEF 25 RS CHROMIUM SALT

Components	California Proposition 65 - Carcinogens	California - Proposition 65 - Developmental Toxicity	California - Proposition 65 - Reproductive Toxicity - Female	California - Proposition 65 - Reproductive Toxicity - Male
Chromium trioxide	X	X	X	X
Sodium sulfate	-	-	-	-

Components	U.S. - New Jersey - Right to Know Hazardous Substance List	Massachusetts - Right To Know List	U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List	U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances
Chromium trioxide	Present	Carcinogen Extraordinarily hazardous	Present	Present
Sodium sulfate	-	Present	Present	-

U.S. Regulations Legend

TSCA 12(b): TSCA Section 12(b) - Export Notification
 SARA 302: CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs and TPQs
 SARA 313: CERCLA/SARA - Section 313 - Emission Reporting
 CERCLA RQ: CERCLA/SARA - Hazardous Substances and Their Reportable Quantities
 CWC: Chemical Weapons Convention - Annex on Chemicals
 DEA LISTED: DEA (Drug Enforcement Administration) - DEA Controlled, Precursors, and / or Essential Chemicals
 CCL: Commerce Control List, Part 774 of Export Administration Regulations, US Commerce Department

Canada Regulations:

This product has been classified in accordance with the criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

WHMIS Controlled List

Components	CAS-No	Call Out Threshold
Chromium trioxide	1333-82-0	0.1

WHMIS Hazard Class:

- C Oxidizing materials
- D1A Very toxic materials
- D2A Very toxic materials
- D2B Toxic materials
- E Corrosive material

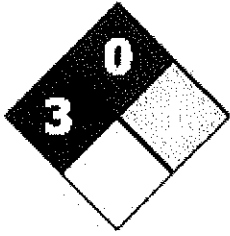


Substances currently restricted by WEEE/RoHS (European Directive 2002/96/EC , 2002/95/EC) or ELV (European Directive 2000/53/EC):

PBDE	PBB	Cr(VI)	Hg	Pb	Cd
-	-	>0.1%	-	-	-

16. OTHER INFORMATION

16. OTHER INFORMATION



NFPA: Health: 3Flammability: 0Instability: 1Other data: Oxy

CAREFULLY READ THE FOLLOWING: The identification of ingredients in this document meets or exceeds the requirements set forth in 29 CFR, 40 CFR, TDG et al. at the date of publication. Ingredients present in a mixture or solution which are generically identified or not referenced in this document are not regulatorily required to be specifically identified or referenced. The information contained herein should be provided to all those who will use, handle, store, transport, or may otherwise be exposed to this product.

THE INFORMATION CONTAINED HEREIN, TO THE BEST OF OUR KNOWLEDGE, IS CONSIDERED TO BE ACCURATE. SUCH INFORMATION IS OFFERED SOLELY FOR YOUR CONSIDERATION, INVESTIGATION, AND VERIFICATION, AND WE DO NOT SUGGEST OR GUARANTEE THAT ANY PRECAUTIONS, PROCEDURES, RECOMMENDATIONS ETC. ARE PREFERRED OR UNIQUE. ATOTECH USA INC. AND ATOTECH CANADA LTD. MAKE NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE USE OF THIS INFORMATION OR THE USE OF MATERIAL IDENTIFIED HEREIN, IN COMBINATION WITH ANY OTHER MATERIAL OR PROCESS, AND ASSUMES NO RESPONSIBILITY THEREFORE. THIS DOCUMENT WAS DEVELOPED UNDER THE REQUIREMENTS OF THE UNITED STATES AND CANADA, AND AS SUCH MAY NOT SATISFY OTHER STATE, PROVINCIAL OR REGIONAL REQUIREMENTS.

Prepared by: H.E.S. Department

()

()

()

NONE.

Safety Data Sheet



Product: HandMaster Pumicized Waterless Citrus Hand Cleaner

Manufactured and/or Distributed by: Penco Products, Inc. | 1820 Stonehenge Drive, Greenville, NC 27858

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name: HandMaster Pumicized Waterless Citrus Hand Cleaner

Other Identifiers:

Recommended Use: For Skin Cleansing

Emergency Phone: 800-228-5635

SDS Supplier Address:
Penco Products, Inc.
1820 Stonehenge Drive
Greenville, NC 27858 USA

Non-Emergency Phone: 800-562-1000

SECTION 2: HAZARDS IDENTIFICATION

Classification:

Hazard Category:

Eye Damage/Irritation Category 2B

Signal Word:

Warning

Hazard Statement:

Causes Eye Irritation

Precautionary Statement:

Prevention:

Wash hands thoroughly after handling
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Response:

If eye irritation persists: Get medical advice/attention

SECTION 3: INFORMATION ON INGREDIENTS

Chemical Name: Hand Cleanser

Classification: Mixtures

This product meets the FDA definition of a cosmetic product.

Ingredient	Common Name/Synonyms	CAS Number	%
Poly(oxy-1,2-ethanediyl), a-undecyl-w-hydroxy-	Ethoxylated Alcohol Surfactant Tomadol 1-7 Undeceth-7	34398-01-1	1 - 5
Poly(oxy-1,2-ethanediyl), a-undecyl-w-hydroxy-	Ethoxylated Alcohol Surfactant Tomadol 1-3 Undeceth-3	34398-01-1	1 - 5
Remaining Ingredients	The specific chemical identity and/or exact percentage of composition has been withheld as a trade secret.		90 - 98

SECTION 4: FIRST AID MEASURES

General Information

It is unlikely that emergency treatment will be required.

After Inhalation:

Not a normal route of entry

After Skin Contact:

Wash off with water.

After Eye Contact:

Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do so. Continue rinsing.
If irritation persists: Get medical advice/attention.

After Swallowing:

Not a normal route of entry.

Most important symptoms and effects:

Contact with eyes may cause temporary burning and redness.

Notes to Physician:

Treat symptomatically.

Indication of any immediate medical attention and special treatment needed: No further relevant information is available.



SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing agents: CO₂, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

Specific hazards arising from the substance or mixture

Potential products of combustion Unknown

Advice for Firefighters

Protective Equipment In case of insufficient ventilation, wear suitable respiratory equipment.

Additional Information Cool endangered containers with water spray.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions Surfaces will become slippery if product is spilled.

Environmental Precautions: Do not allow to enter sewers, or surface or ground water.

Containment Methods: Ensure adequate ventilation. Prevent further spread of any spilled material, if safe to do so.

Methods for clean up: Absorb liquid components with liquid-binding material.

Clean the affected area carefully with water.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling Avoid contact with eyes.

Requirements to be met by store rooms and receptacles

Storage Conditions Store in a cool, dry location, out of direct sunlight.

Incompatible Material None known based on information available

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Guidelines: This product presents no health hazards to the user when used according to labels directions for it's intended use.

Permissible or Recommended Exposure Limits for mixture

ACGIH Undetermined

NIOSH Undetermined

OSHA Undetermined

Appropriate Engineering Controls See section 7. No additional data available.

Individual Protective Measures

General hygienic measures: Wash hands before breaks and at the end of work.

Respiratory Protection: Not necessary if area is well ventilated.

Hand Protection: Not generally required.

Eye Protection: In case of splash risk, wear safety glasses.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

Form	Thick Lotion
Color	Green
Odor	Citrus
Odor Threshold	Not determined
pH Value	6 - 7
Specific Gravity	1.1

Change in Condition:

Melting Point / Melting Range	Not determined
Boiling Point / Boiling Range	100°C / 212°F
Freezing Point	32°F (0°C)
Flash Point	>210°F (>99°C)
Flammability (solid, gas)	Not Applicable
Ignition Temperature	Not determined
Decomposition Temperature	Not determined
Self Igniting	Product is not self-igniting
Danger of Explosion	Not determined

Explosion Limits	Not determined
Vapor Pressure at 20°C	Not determined
Density at 20°C	Not determined
Relative Density	Not determined
Vapor Density	Not determined
VOC Contribution	0% by weight
Evaporation Rate	Not determined
Solubility in / Miscibility with water	Soluble (liquid portion)
Partition coefficient (n-octanol/water)	Not determined
Viscosity	
Dynamic	Not determined
Kinematic	Not determined

SECTION 10: STABILITY AND REACTIVITY

Reactivity:	Normally non-reactive
Chemical Stability:	Stable if used as directed
Possibilities of Hazardous Reactions:	None known
Conditions to Avoid:	None known
Incompatible Materials:	None known
Hazardous Decomposition Products:	None known

SECTION 11: TOXICOLOGICAL INFORMATION

Likely Routes of Exposure:	Skin, Eye
Symptoms of Exposure	
Skin Exposure	Long term or excessive use may cause dryness.
Eye Exposure	Contact will cause burning and irritation.
Chronic Effects	None Known
Acute Toxicity	Not Tested
Carcinogenicity	None of the chemicals used in this product have been found to be carcinogenic by NTP, IARC, OSHA, or ACGIH



SECTION 12: ECOLOGICAL INFORMATION

Toxicity	
Aquatic Toxicity	Not Tested
Persistence and Degradability	Not Tested
Behavior in Environmental Systems	
Bioaccumulative Potential	Not Tested
Mobility in Soil	Not Tested
Ecotoxicological Effects	
Behavior in Sewage Processing Plants	Not Tested

SECTION 13: DISPOSAL CONSIDERATIONS

Dispose of in accordance with applicable local, state and federal regulations.

SECTION 14: TRANSPORTATION INFORMATION

UN Number	
DOT, IMDG, IATA	Unregulated
UN Proper Shipping Name	
DOT	Unregulated
IMDG	Unregulated
IATA	Unregulated
Environmental Hazard	
Marine Pollutant	Unknown
Special Precautions for the user	None

SECTION 15: REGULATORY INFORMATION

All ingredients used in this product are listed in the TSCA Inventory.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

This product meets the definition of a cosmetic per The US Food and Drug Administration.

SECTION 16: OTHER INFORMATION

HMIS:

Health: 1 Flammability: 0 Toxicity: 0 Personal Protection: not determined

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Abbreviations and acronyms:

DOT: Department of Transportation (USA)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

ICAO: International Civil Aviation Organization

TSCA: Toxic Substance Control Act (USA)

CPR: Controlled Products Regulations (Canada)

GHS: Globally Harmonized System of Classification and Labeling of Chemicals

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent



The information in this MSDS concerns the product mentioned in heading 1 and is given on the assumption that the product will be used in a way and for purposes indicated by the manufacturer. The information above is believed to be accurate and represents the best information currently available to us. Users should make their own investigations to determine the suitability of the information for their particular purposes. It is recommendable to pass the information from this MSDS, if necessary adjusted, to personnel/ party concerned.

Prepared: July 17, 2013

Revised: November 4, 2014



Material Safety Data Sheet

GEAR GLX SERIES

(80W-140, 80W-90, LS 80W-90, 85W-140, 90)

Material Identification and Use

Manufacturer's Name	NOCO Energy Corp..
Manufacturer's Address	2440 Sheridan Dr., Tonawanda, NY 14150 (U.S. and Canada)
Emergency Phone Number	1-800-424-9300 (Chemtrec)
Supplier's Address	P.O. Box 86, Tonawanda, NY 14151
Supplier Emergency Phone Number	1-800-500-6626
Product Name	Gear GLX Series
Product Code	NOC2314 GLX 80W-140 NOC2316 GLX 80W-90, LS 80W-90 NOC2317 GLX 85W-140 NOC2318 GLX 90
Chemical Name and Synonym	Petroleum Hydrocarbon
Formula	N/A
Product Use	Formulated with high quality base stocks and additives without zinc in compliance with Eaton, General Motors, and International Harvester requirements for truck driving axles.

Chemical Ingredients

Product Components	% (Volume)	CAS Number
Solvent Refined Residual Oil	55 - 95	64742-01-4
Solvent Refined Heavy Paraffinic Distillate	2 - 40	64741-88-4
Additives	5 - 15	Mixture
WHMIS classification	Not Controlled	

Physical Properties

Physical Form	Liquid
Color	Brown

Odor	Dark Pale
Appearance	Liquid
Specific Gravity	0.8922
Vapor Pressure (mm HG @ 20° C)	0
Vapor Density	Not Volatile
Evaporation Rate	Not Determined
Boiling Point	> 330°C (>625°F)
Freezing Point	N/A
pH	N/A
Solubility in H2O	0 at 20°C
Melting Point	Less than -27°C (-16°F)
Viscosity SUS at 100°F	> or = 100
Stability	Product is stable under normal conditions

Fire and Explosion Hazards

Conditions of Flammability	Addition of water or foam may cause frothing. Do not cut, drill or weld empty containers.
Extinguishing Agents	Foam, Water Fog, Dry Chemical, Carbon Dioxide. Closed containers exposed to fire may be cooled with water.
Flashpoint and Method of Determination	420°F (215°C) , COC
Flammable Limits in Air % B. V. Upper	Not Determined
Flammable Limits in Air % B. V. Lower	Not Determined
NFPA - Hazard Class	Health:1 Fire:1 Reactivity:0
Hazardous Combustion Products	From Burning; carbon monoxide, carbon dioxide and oxides of phosphorous.
Unusual Fire an Explosion Hazard	Do not cut, weld, braze, solder, drill, grind or expose containers, drums, tanks, etc. of product to heat, flame, sparks, static electricity or other sources of ignition; they may ignite explosively.
Special Fire Fighting Procedures	Wear self contained breathing apparatus when fire fighting in a confined space. Do not use water except as fog.

Reactivity Data

Chemical Stability	Stable
--------------------	--------

Incompatible Materials	Keep away from strong oxidizing agents, such as, hydrogen peroxide, Bromine, chlorine and chomic acid.
Hazardous Decomposition	Oxides of Carbon, Sulfur, Phosphates, and minor amounts of H ₂ S.
Hazardous Polymerization	Material is not known to polymerize.

Health Hazard Information

Routes of Entry

Skin Contact	Prolonged or repeated contact with skin may cause mild irritation and possibly dermatitis.
Eye	Mildly irritating to eyes.
Inhalation	If heated, sprayed or misted, may cause chemical pneumontis.
Ingestion	Low toxicity on ingestion. Has laxative effect.
Carcinogenicity	Not listed as a carcinogenic.
Health Hazard Data	Permissible Concentrations (air): see COMMENTS section Chronic effects of overexposure: no data available Acute toxicological properties: no data available

Emergency and First Aid Procedures

Eyes	In case of contact, immediately flush eyes with large amounts of water for at least 15 minutes. Get medical attention.
Skin	Remove excess with cloth or paper. Wash skin thoroughly with soap and water or waterless hand cleaner. If irritation occurs, get medical attention.
Inhalation	If breathing is difficult, remove victim to fresh air, give artificial respiration if not breathing. Call a physician.
Ingestion	Do not ingest. If ingested, do not induce vomiting. Contact a physician immediately.

Special Protection / Preventative Measures Information

Ventilation Requirements	Use explosion proof ventilation as required to control vapor concentration. See COMMENTS section.
Respiratory Protection	If vapor concentration exceeds permissible exposure use NIOSH / MSHA certified respirator with dual organic vapor, mist and particulates cartridge.

Eye Protection	Safety glasses with side shields or goggles. (Chemical safety goggles)
Protective Gloves	Neoprene Type
Personal Hygiene	Wear effective plant clothing. Contaminated clothing should be removed and washed in soap and water. Cleanse skin thoroughly before meals with soap and water. Shower and eyewash facilities should be accessible.
Additional Protective Equipment	None
Note	N/A

Environmental Procedures

Spills or Releases	If material is spilled or released to the atmosphere, steps should be taken to prevent discharges to streams or sewer systems. Transfer bulk of mixture into another container. Absorb residue with inert material such as earth, sand, or vermiculate. Sweep up and dispose as solid waste in accordance with local, state, and federal regulations. Spills or releases should be reported, if required to the appropriate local, state and federal regulatory agencies.
Waste Disposal	Clean up action should be carefully planned and executed. Shipment, storage and/or disposal of waste materials are regulated and action to handle or dispose of spilled or released materials must meet all state, local, and federal rules.
Storage	Protect against physical damage. Separate from oxidizing materials. Store in cool well ventilated area of non-combustible construction away from possible sources of ignition. Do not handle or store at temperatures over (maximum storage temperature) 60°C (140°F)

Regulatory Information

Dept. of Transportation	DOT Shipping Name: NONE Hazard Class: NONE ID Number: NONE Special Transportation Notes - NONE
TSCA	All Components are Listed on EPA/TSCA Inventory.
CERCLA	This product is classified as an oil under section 311. Spills into or leading to surface water that cause sheen must be reported to the National Response Center at 1-800-424-8802.
RCRA	If this product becomes a waste it would not be a hazardous waste by RCRA - 40 CFR 261. Place in

	an appropriate disposal facility in compliance with local authorities.
SARA Title III - Section 302	Not Applicable
Section 311/312	Not Applicable
Section 313	This product does not contain any chemical in sufficient quantity to be subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.
Reportable Quantity	N/A
Freight Classification	Petroleum Lubricating Oil

Comments

If used in applications where a mist may be generated, observe a TWA/PEL of 5 mg/m³ for mineral oil mist (OSHA and ACGIH).

All components of this product are on the US TSCA Inventory and Canadian Domestic Substance List.

The additive manufacturers have declared the additive mixtures in this product a trade secret.

Preparation Date of Material Safety Data Sheet

Prepared By	Robert M. Kellam (814) 368-1317 Tom Scoda (585) 924-4130
Phone number of Preparer	1-800-500-6626
Date Prepared	06/29/2000
Revised Date	06/01/2008

Disclaimer

We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind, express or implied, and we assume no responsibility for an loss, damage, or expense, direct or consequential, arising out of their use.



SAFETY DATA SHEET

Revision Date 05/20/2015

1. IDENTIFICATION

Product Identifier

Product Name **Fluid Film[®] Aerosol (AS)**
 Product Type Liquid, lubricant, Corrosion inhibitor

Other means of identification

Synonyms None

Recommended use of the chemical and restrictions on use

Recommended Use Corrosion inhibitor, lubricant
 Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier Name Eureka Chemical Company
 Supplier Address 234 Lawrence Ave
 South San Francisco, CA 94080
 US
 Supplier Phone Number Phone: 650-761-3536
 Fax: 650-589-1943
 Contact Phone: 1-650-761-3536
 Supplier Email info@fluid-film.com
 Emergency telephone number Chemtrec (800) 424-9300

2. HAZARDS IDENTIFICATION


Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Flammable Aerosols	Category 1
--------------------	------------

GHS Label elements, including precautionary statements

Emergency Overview

Signal word	Danger
Hazard Statements	Extremely flammable aerosol
	
Appearance Straw-colored liquid	Physical State Liquid spray Aerosol
	Odor Mild piney odor

Precautionary Statements - Prevention

Obtain special instructions before use.
 Do not handle until all safety precautions have been read and understood.
 Use personal protective equipment as required.
 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
 Pressurized container: Do not pierce or burn, even after use.
 Do not spray on an open flame or other ignition source.

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention

Precautionary Statements - Storage

Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F

Precautionary Statements - Disposal

Product should be disposed of via authorized waste disposal contractors in accordance with all local and national regulations.

Hazards not otherwise classified (HNOC)

Not applicable

Unknown Toxicity

No information available.

Other information

No information available.

Interactions with Other Chemicals

No information available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight-%	Trade Secret
Refined petroleum oil, hydrotreated heavy paraffinic	64742-54-7	40 - 80	*
Petroleum gases, liquified, sweetened	68476-86-8	1 - 25	*
Calcium petroleum sulfonate	61789-86-4	1 - 10	*

*The exact percentage (concentration) of composition has been withheld as a trade secret

4. FIRST AID MEASURES

First aid measures**General Advice**

Show this safety data sheet to the doctor in attendance.

Eye Contact

Rinse thoroughly with plenty of water for at least 15 minutes, also under the eyelids. If symptoms persist, call a physician.

Skin Contact

Wipe excess material from the skin with a cloth, followed by washing with soap and water. A waterless skin cleanser is beneficial in removing the material from the skin. In the case of skin irritation or allergic reactions, see a physician.

Inhalation

If respiratory symptoms develop, remove to fresh air. If symptoms persist, call a physician.

Ingestion

Do NOT induce vomiting. Drink plenty of water. If symptoms persist, call a physician.

Self-protection of the first aider Ensure that medical personnel are aware of the material(s) involved.

Most important symptoms and effects, both acute and delayed

Most Important Symptoms and Effects No information available.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES**Suitable Extinguishing Media**

Dry chemical. Carbon dioxide (CO2). Foam.

Unsuitable Extinguishing Media

DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.

Specific Hazards Arising from the Chemical

Some may burn but none ignite readily. Ruptured cylinders may rocket.

Uniform Fire Code Aerosols: Level III

Hazardous Combustion Products

Carbon oxides.

Explosion Data

Sensitivity to Mechanical Impact No.

Sensitivity to Static Discharge Yes.

Protective equipment and precautions for firefighters

Move containers from fire area if you can do it without risk. Damaged cylinders should be handled only by specialists.

6. ACCIDENTAL RELEASE MEASURES**Personal precautions, protective equipment and emergency procedures**

Personal Precautions Stop leak if you can do it without risk.

Other Information Ventilate the area.

Environmental Precautions

Environmental Precautions Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling Handle in accordance with good industrial hygiene and safety practice. Do not puncture or incinerate cans. Contents under pressure. Avoid breathing vapors or mists. Avoid contact with eyes. Keep away from open flames, hot surfaces and sources of ignition.

Conditions for safe storage, including any incompatibilities

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from sunlight. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Keep in properly labeled containers. Do not store near combustible materials. Keep in an area equipped with sprinklers.

Incompatible Products None known based on information supplied.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Refined petroleum oil, hydrotreated heavy paraffinic 64742-54-7	TWA: 5 mg/m ³ , as oil mist, mineral STEL: TWA: 10 mg/m ³ , as oil mist, mineral	TWA: 5 mg/m ³ , as oil mist, mineral	

ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits NIOSH IDLH Immediately Dangerous to Life or Health

Other Exposure Guidelines Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992) See section 15 for national exposure control parameters

Appropriate engineering controls

Engineering Measures Showers
Eyewash stations
Ventilation systems

Individual protection measures, such as personal protective equipment

Eye/Face Protection No special protective equipment required. Use chemical eye goggles in tanks and confined spaces.

Skin and Body Protection Wear protective gloves and protective clothing.

Respiratory Protection No protective equipment is needed under normal use conditions. Use approved respirator with organic vapor cartridges in tanks and confined spaces. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Physical State Liquid spray Aerosol

Appearance	Amber	Odor	Mild piney odor
Color	Straw-colored	Odor Threshold	No information available
<u>Property</u>	<u>Values</u>	<u>Remarks/ Method</u>	
pH	7.8	None known	
Melting / freezing point	No data available	None known	
Boiling point / boiling range	No data available	None known	
Flash Point	207 C / 405 F (less propellant)	None known	
Evaporation Rate	No data available	None known	
Flammability (solid, gas)	No data available	None known	
Flammability Limit in Air			
Upper flammability limit	No data available		
Lower flammability limit	No data available		
Vapor pressure	No data available	None known	
Vapor density	No data available	None known	
Specific Gravity	0.880 (less propellant)	None known	
Water Solubility	Insoluble in water	None known	
Solubility in other solvents	No data available	None known	
Partition coefficient: n-octanol/water	No data available	None known	
Autoignition temperature	No data available	None known	
Decomposition temperature	No data available	None known	
Kinematic viscosity	No data available	None known	
Dynamic viscosity	No data available	None known	
Explosive properties	No data available		
Oxidizing Properties	No data available		

Other Information

Softening Point	No data available
VOC Content (%)	< 25% (CARB 310)
VOC Content	< 219 g/L
Particle Size	No data available
Particle Size Distribution	

10. STABILITY AND REACTIVITY

Reactivity

No data available.

Chemical stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Hazardous Polymerization

Hazardous polymerization does not occur.

Conditions to avoid

Heat, flames and sparks.

Incompatible materials

None known based on information supplied.

Hazardous Decomposition Products

Carbon oxides.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information	Product does not present an acute toxicity hazard based on known or supplied information.
Inhalation	Specific test data for the substance is not available.
Eye Contact	Minimally irritating.
Skin Contact	Prolonged contact could cause skin irritation.
Ingestion	> 5000 mg/kg (Rat)

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Calcium petroleum sulfonate 61789-86-4	> 5000 mg/kg (Rat)	> 4000 mg/kg (Rabbit)	-

Information on toxicological effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization No information available.

Mutagenic Effects There is no data available for this product.

Carcinogenicity Contains no known carcinogens.

Reproductive Toxicity No information available.

STOT - single exposure No information available.

STOT - repeated exposure No information available.

Chronic Toxicity No information available.

Target Organ Effects No information available.

Aspiration Hazard No information available.

Numerical measures of toxicity Product Information

The following values are calculated based on chapter 3.1 of the GHS document
Not applicable

12. ECOLOGICAL INFORMATION

Ecotoxicity

No information available.

Persistence and Degradability

No information available.

Bioaccumulation

No information available.

Other adverse effects

No information available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal methods

Product should be disposed of via authorized waste disposal contractors in accordance with all local and national regulations. Consult the appropriate state, regional, or local regulations for additional requirements.

Contaminated Packaging

Dispose of contents/containers in accordance with local regulations.

14. TRANSPORT INFORMATION

DOT

Proper Shipping Name	CONSUMER COMMODITY
Hazard Class	ORM-D
Description	CONSUMER COMMODITY, ORM-D
Emergency Response Guide Number	126

TDG

UN-No.	UN1950
Proper Shipping Name	AEROSOLS
Hazard Class	2.1
Description	UN1950, AEROSOLS, 2.1

MEX

UN-No.	UN1950
Proper Shipping Name	AEROSOLS
Hazard Class	2.1
Description	UN1950, AEROSOLS, 2.1

ICAO

UN-No.	UN1950
Proper Shipping Name	AEROSOLS
Hazard Class	2.1
Description	UN1950, AEROSOLS, 2.1

IATA

UN-No.	UN1950
Proper Shipping Name	AEROSOLS, FLAMMABLE
Hazard Class	2.1
Description	UN1950, AEROSOLS, FLAMMABLE, 2.1

IMDG/IMO

UN-No.	UN1950
Proper Shipping Name	AEROSOLS
Hazard Class	2.1
EmS No.	F-D, S-U
Description	UN1950, AEROSOLS, 2.1

RID

UN-No.	UN1950
Proper Shipping Name	AEROSOLS
Hazard Class	2.1
Classification code	5F
Description	UN1950, AEROSOLS, 2.1

ADR

UN-No.	UN1950
Proper Shipping Name	AEROSOLS
Hazard Class	2.1
Classification code	5F
Tunnel restriction code	(D)
Description	UN1950, AEROSOLS, 2.1

ADN

UN-No.	UN1950
Proper Shipping Name	AEROSOLS
Hazard Class	2.1
Classification code	5F
Special Provisions	190, 327, 344, 625
Description	UN1950, AEROSOLS, 2.1
Limited Quantity	1 L
Ventilation	VE01, VE04

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL	All components are listed either on the DSL or NDSL.

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
 DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

US Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	Yes
Sudden release of pressure hazard	Yes
Reactive Hazard	No

VOC Regulations

This product complies with the consumer product VOC limits of CARB, the US EPA and states adopting the OTC VOC rules.

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania	Rhode Island	Illinois
Propane 74-98-6	X	X	X		
N-Butane 106-97-8	X	X	X		
Isobutane 75-28-5	X	X	X		
1,1-Difluoroethane 75-37-6	X	X			

International Regulations

Canada

WHMIS Hazard Class

A - Compressed gases

B5 - Flammable aerosol



16. OTHER INFORMATION

NFPA	Health Hazards 0	Flammability 4	Instability 0	Physical and Chemical Hazards -
HMIS	Health Hazards 0	Flammability 4	Physical Hazard 0	Personal Protection X

Chronic Hazard Star Legend * = Chronic Health Hazard

Prepared By Product Stewardship
23 British American Blvd.
Latham, NY 12110
1-800-572-6501

Revision Date 05/20/2015

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

The supplier identified below generated this SDS using the UL SDS template. UL did not test, certify, or approve the substance described in this SDS, and all information in this SDS was provided by the supplier or was reproduced from publicly available regulatory data sources. UL makes no representations or warranties regarding the completeness or accuracy of the information in this SDS and disclaims all liability in connection with the use of this information or the substance described in this SDS. The layout, appearance and format of this SDS is © 2014 UL LLC. All rights reserved.

End of Safety Data Sheet

SAFETY DATA SHEET



DUJEL 1200

Section 1. Identification

GHS product identifier : DUJEL 1200
Product code : 11592330, 11592470, 11592700
SDS # : MS0127217
Other means of identification : Not available.
Product type : Liquid.

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Alkaline gel cleaner
Supplier/Manufacturer : DuBois Chemicals, Inc. DuBois Chemicals Canada, Inc.
3630 E. Kemper Road 1155 North Service Road West
Cincinnati, Ohio 45241 Unit 6
Phone: 1-800-438-2647 Oakville, Ontario, L6M 3E3 Canada
Phone: 1-866-861-3603
Emergency telephone number : 1-866-923-4919 (US and Canada)
01-651-523-0314 (Int'l and Mexico)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture : CORROSIVE TO METALS. - Category 1
SKIN CORROSION/IRRITATION - Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1

GHS label elements

Hazard pictograms :



Signal word : Danger
Hazard statements : May be corrosive to metals.
Causes severe skin burns and eye damage.

Precautionary statements

Prevention : Wear protective gloves. Recommended: Chemical-resistant gloves. Wear eye or face protection; Recommended: splash goggles. Wear protective clothing. Keep only in original container. Wash hands thoroughly after handling. Do not breathe dust or mist.
Response : Absorb spillage to prevent material damage. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up. Store in corrosive resistant container with a resistant inner liner.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Ingredient name	%	CAS number
sodium hydroxide	5 - 10	1310-73-2

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
- Inhalation** : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Get medical attention immediately. Call a poison center or physician. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system.
- Skin contact** : Causes severe burns.
- Ingestion** : May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness
- Inhalation** : No specific data.

Section 4. First aid measures

Skin contact : Adverse symptoms may include the following:
 pain or irritation
 redness
 blistering may occur

Ingestion : Adverse symptoms may include the following:
 stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
 carbon dioxide
 carbon monoxide
 sulfur oxides
 metal oxide/oxides

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Absorb spillage to prevent material damage. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Absorb spillage to prevent material damage. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from acids. Empty containers retain product residue and can be hazardous. Do not reuse container. Absorb spillage to prevent material damage.
- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store in corrosive resistant container with a resistant inner liner. Store locked up. Separate from acids. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	CAS #	ACGIH	OSHA	Mexico
sodium hydroxide	1310-73-2	C: 2 mg/m ³	TWA: 2 mg/m ³ 8 hours.	LMPE-Pico: 2 mg/m ³

- Engineering measures** : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Personal protection**
- Respiratory** : If a risk assessment indicates this is necessary, use a properly fitted, air-purifying or airfed respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. Recommended: splash goggles
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Personal protective equipment (Pictograms)



Section 9. Physical and chemical properties

Appearance

Physical state	: Liquid.
Color	: Green
Odor	: Not available.
Odor threshold	: Not available.
pH	: 13.8
Melting point	: Not available.
Boiling point	: Not available.
Flash point	: Closed cup: >93.333°C (>200°F) [Pensky-Martens (ASTM D93)] [Product does not sustain combustion.]
Burning time	: Not applicable.
Burning rate	: Not applicable.
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: Not available.
Relative density	: 1.083
Solubility	: Easily soluble in the following materials: cold water and hot water.
Solubility in water	: Not available.
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: Not available.
Elemental Phosphorus	: 0 %
VOC content	: Not available.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.
Incompatible materials	: Extremely reactive or incompatible with the following materials: oxidizing materials and acids.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Storage	: Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store in corrosive resistant container with a resistant inner liner. Store locked up. Separate from acids. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 11. Toxicological information

Information on toxicological effects

Carcinogenicity

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
ethanol	A3	1	-	-	-	-

Information on the likely routes of exposure : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

Eye contact : Causes serious eye damage.
Inhalation : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system.
Skin contact : Causes severe burns.
Ingestion : May cause burns to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
 pain
 watering
 redness
Inhalation : No specific data.
Skin contact : Adverse symptoms may include the following:
 pain or irritation
 redness
 blistering may occur
Ingestion : Adverse symptoms may include the following:
 stomach pains

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.
Carcinogenicity : No known significant effects or critical hazards.
Mutagenicity : No known significant effects or critical hazards.
Teratogenicity : No known significant effects or critical hazards.
Developmental effects : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	6060.6 mg/kg
Dermal	14666.7 mg/kg

Section 12. Ecological information

toxicity : Not available.

Aquatic ecotoxicity

Not available.

Section 13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

RCRA classification : D002 [corrosive]

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport information

IATA/IMDG/DOT/TDG: Please refer to the Bill of Lading/receiving documents for up to date shipping information.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export:** No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 311: sodium hydroxide
CERCLA: Hazardous substances.: sodium hydroxide: 1000 lbs. (454 kg);

EPA Registration Number : Not available.

Clean Air Act Section 112 : Not listed

(b) Hazardous Air Pollutants (HAPs)

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Immediate (acute) health hazard

State regulations

Massachusetts : The following components are listed: SODIUM HYDROXIDE

New York : The following components are listed: Sodium hydroxide

New Jersey : The following components are listed: SODIUM HYDROXIDE; CAUSTIC SODA; ETHYL ALCOHOL; ALCOHOL

Pennsylvania : The following components are listed: SODIUM HYDROXIDE (NA(OH)); DENATURED ALCOHOL

California Prop. 65

Not available.

Canada

Canadian lists

Section 15. Regulatory information

- Canadian NPRI : None of the components are listed.
 Canada inventory : All components are listed or exempted.
 Canadian PCP/DIN Number : Not available.

International regulations

- International lists : **Australia inventory (AICS)**: All components are listed or exempted.
China inventory (IECSC): All components are listed or exempted.
Japan inventory: All components are listed or exempted.
Korea inventory: Not determined.
Malaysia Inventory (EHS Register): Not determined.
New Zealand Inventory of Chemicals (NZIoC): Not determined.
Philippines inventory (PICCS): Not determined.
Taiwan inventory (CSNN): Not determined.

Section 16. Other information

History

- Date of printing : 7/16/2015.
 Date of issue/Date of revision : 7/16/2015.
 Date of previous issue : 7/15/2015.
 Version : 4

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SAFETY DATA SHEET



DUJEL 200

Section 1. Identification

GHS product identifier : DUJEL 200
Product code : 11630100, 11630470, 11630330, 11630470DK, 11630100DK
SDS # : DUB00116
Other means of identification : Not available.
Product type : Liquid.

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Acid gel cleaner
Supplier/Manufacturer : DuBois Chemicals, Inc. DuBois Chemicals Canada, Inc.
3630 E. Kemper Road 1155 North Service Road West
Cincinnati, Ohio 45241 Unit 6
Phone: 1-800-438-2647 Oakville, Ontario, L6M 3E3 Canada
Phone: 1-866-861-3603

Emergency telephone number : 1-866-923-4919 (US and Canada)
01-651-523-0314 (Int'l and Mexico)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : ACUTE TOXICITY: ORAL - Category 4
SKIN CORROSION/IRRITATION - Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
SKIN SENSITIZATION - Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Harmful if swallowed.
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.

Precautionary statements

Prevention : Wear eye/face protection. Wear protective gloves. Wear protective clothing. Avoid breathing vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.

Response : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Section 2. Hazards identification

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Ingredient name	%	CAS number
urea hydrochloride	20 - 30	506-89-8
Ethanol, 2,2'-iminobis-, N-tallow alkyl derivs.	1 - 5	61791-44-4

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
- Inhalation** : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Skin contact** : Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : Causes severe burns. May cause an allergic skin reaction.
- Ingestion** : Harmful if swallowed. May cause burns to mouth, throat and stomach.

Section 4. First aid measures

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
- Ingestion** : Adverse symptoms may include the following:
stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.
- See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.
- Specific hazards arising from the chemical** : In a fire or if heated, a pressure increase will occur and the container may burst.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
halogenated compounds
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

- Large spill** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). The spilled material may be neutralized with sodium carbonate, sodium bicarbonate or sodium hydroxide. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from alkalis. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Separate from alkalis. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

- Engineering measures** : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

- Respiratory** : If a risk assessment indicates this is necessary, use a properly fitted, air-purifying or airfed respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. Recommended: splash goggles
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Section 8. Exposure controls/personal protection

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Personal protective equipment (Pictograms) :



Section 9. Physical and chemical properties

Appearance

Physical state	: Liquid.
Color	: Red.
Odor	: Not available.
Odor threshold	: Not available.
pH	: <2
Melting point	: Not available.
Boiling point	: Not available.
Flash point	: Closed cup: >93.333°C (>200°F) [Pensky-Martens (ASTM D93)] [Product does not sustain combustion.]
Burning time	: Not applicable.
Burning rate	: Not applicable.
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: Not available.
Relative density	: 1.103
Solubility	: Easily soluble in the following materials: cold water and hot water.
Solubility in water	: Not available.
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: Not available.
Elemental Phosphorus	: 0 %
VOC content	: Not available.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.
Incompatible materials	: Not available.

Section 10. Stability and reactivity

- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Separate from alkalis. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 11. Toxicological information

Information on toxicological effects

- Information on the likely routes of exposure** : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : Causes severe burns. May cause an allergic skin reaction.
- Ingestion** : Harmful if swallowed. May cause burns to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
- Ingestion** : Adverse symptoms may include the following:
stomach pains

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Long term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Potential chronic health effects

Not available.

- General** : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
- Carcinogenicity** : No known significant effects or critical hazards.
- Mutagenicity** : No known significant effects or critical hazards.
- Teratogenicity** : No known significant effects or critical hazards.
- Developmental effects** : No known significant effects or critical hazards.

Section 11. Toxicological information

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	1674.5 mg/kg

Section 12. Ecological information

Ecotoxicity : Not available.

Aquatic ecotoxicity

Not available.

Section 13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

RCRA classification : D002 [corrosive]

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport information

IATA/IMDG/DOT/TDG: Please refer to the Bill of Lading/receiving documents for up to date shipping information.

Section 15. Regulatory information

U.S. Federal regulations : TSCA 12(b) one-time export: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.

EPA Registration Number : Not available.

Clean Air Act Section 112 : Not listed

(b) Hazardous Air Pollutants (HAPs)

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Immediate (acute) health hazard
Delayed (chronic) health hazard

State regulations

Massachusetts : None of the components are listed.

New York : None of the components are listed.

Section 15. Regulatory information

New Jersey : None of the components are listed.

Pennsylvania : None of the components are listed.

California Prop. 65

Not available.

Canada

Canadian lists

Canadian NPRI : None of the components are listed.

Canada inventory : All components are listed or exempted.

Canadian PCP/DIN Number : Not available.

International regulations

International lists :

- Australia inventory (AICS)**: All components are listed or exempted.
- China inventory (IECSC)**: All components are listed or exempted.
- Japan inventory**: Not determined.
- Korea inventory**: Not determined.
- Malaysia Inventory (EHS Register)**: Not determined.
- New Zealand Inventory of Chemicals (NZIoC)**: All components are listed or exempted.
- Philippines inventory (PICCS)**: All components are listed or exempted.
- Taiwan inventory (CSNN)**: Not determined.

Section 16. Other information

History

Date of printing : 3/6/2015.

Date of issue/Date of revision : 3/6/2015.

Date of previous issue : No previous validation.

Version : 1

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

92-14772-6

MSDS of CSL 535 Oil Resistant Silicone Sealant/Adhesive



MATERIAL SAFETY DATA

CSL 535 Oil Resistant Silicone Sealant/Adhesive

Reviewed March 30, 2010

MSDS NO. 230

I PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME	CSL 535 Oil Resistant Silicone Sealant/Adhesive
CHEMICAL NAME	Not Applicable
CHEMICAL FORMULA	Silicone Sealant
MOLECULAR WEIGHT	Polymer
MATERIAL USES	Sealant for use in wide range of industrial applications.
MANUFACTURER	CSL Silicones Inc. 144 Woodlawn Road West Guelph, ON N1H 1B5 Canada
TELEPHONE	1-519-836-9044
FAX	1-519-836-9069
EMERGENCY TELEPHONE	1-519-836-9044

II HAZARDS IDENTIFICATION

A. HAZARDOUS INGREDIENTS OF MATERIAL

Methyl Ethyl Ketoxime (MEKO) is a curing by-product that is released when the sealant comes in contact with water or humid air. It is recommended to provide adequate ventilation to keep concentration below 3 ppm. TWA: 3 ppm, STEL: 10 ppm, Work place Environmental Exposure Level AIMA: 10 ppm.

B. EFFECTS OF CHRONIC EXPOSURE

Health Effects	Pulmonary Edema, Dermatitis.
Toxicological Data	LD50 of mixture (calculated) Ingestion/Rat 3810-4670 mg/kg
Carcinogenicity Data	The ingredients of this product are not listed as carcinogens by National Toxicology Program, and have not been evaluated by the International Agency for Research on Cancer or the American Conference of Government Industrial Hygienists.
Reproductive Data	Octamethylcyclotetrasiloxane (in concentration of 500 to 700 ppm) has shown reproductive effects in laboratory animals. No available information of adverse reproductive effects of other ingredients in this product.
Mutagenicity Data	No information available and no adverse mutagenic effects are anticipated.
Teratogenicity Data	No information available and no adverse teratogenic effects are anticipated.
Synergistic Products	None Known.
Delayed Effects	Curing by-product Methyl Ethyl Ketoxime (MEKO). Male rats and mice exposed to MEKO throughout their lifetime developed liver tumors. Many commonly used chemicals cause liver tumors in rats and mice. The relevance to humans is uncertain.

C. EFFECTS OF ACUTE EXPOSURE

Inhalation	Not normally an inhalation hazard. At high vapor concentration, curing by-product has a narcotic action with reversible effects.
-------------------	--

MSDS of CSL 535 Oil Resistant Silicone Sealant/Adhesive

Eyes Moderate irritation. Can cause burns.
 Skin Mild irritant; may cause transient reddening of the skin.
 Ingestion Very low oral toxicity. May cause irritation and obstruction to gastro-intestinal tract.

D. HAZARD SYMBOLS



Harmful if swallowed

III COMPOSITION/INFORMATION ON INGREDIENTS

MATERIAL	%	CAS NUMBER	ACGIH TLV	LD50
Amorphous Silica	5-10	7631-86-9	5 mg/m ³	>5000 mg/kg oral/rat
Oximino Silane	1-5	22984-54-9	Not Established	2-3 mL/kg oral/rat
Amino Alkyl Silane	1-5	919-30-2	Not Established	Not Established
Octamethylcyclotetrasiloxane	0.1-2	556-67-2	10 ppm	2000 mg/kg oral/rat 36 mg/L Inhal/ rat 4 hrs

IV FIRST AID MEASURES

Inhalation No emergency care anticipated. Treat symptomatically. If symptoms persist, consult physician.

Eye Contact Do not attempt to physically remove solids or gums from eye. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 20 minutes, by the clock, holding the eyelid(s) open. Obtain medical attention immediately.

Skin Contact Remove contaminated clothing. Wash gently and thoroughly with water and non-abrasive soap. If symptoms persist, obtain medical attention. Contaminated clothing should be laundered before re-use.

Ingestion Never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. **DO NOT INDUCE VOMITING.** Have victim drink 8 to 10 oz. (240 to 300ml) of water or milk to dilute material in stomach. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Repeat the administration of water/milk. Obtain medical attention immediately.

First Aid Provide general supportive measures (comfort, warmth, rest). Consult a physician and/or the nearest Poison Control Center for all exposures except minor instances of inhalation or skin contact. Solid or plastic material in the eye should be removed only by a physician.

V FIRE FIGHTING MEASURES

A. FIRE AND EXPLOSION DATA

Flash Point of Curing	
By-Product and Method	85° C. P.M.C.C. ASTM D-93
Lower Explosive Limit %	Not Applicable
Upper Explosive Limit %	Not Applicable
Autoignition Temperature	No Data
Fire Extinguishing Agents	Dry Chemical, CO ₂ , Water Spray
Unusual Fire/ Explosion Hazard	None
Hazardous Combustion Products	Carbon Dioxide, Carbon Monoxide, Silicon Dioxide, Nitrogen Oxide, Formaldehyde

MSDS of CSL 335 Oil Resistant Silicone Sealant/Adhesive

B. FIRE FIGHTING PROCEDURES

Wear Self Contained Breathing Apparatus (SCBA) which provides eye protection and is NIOSH approved. Sealant will burn if strongly heated. Water can be used to cool material below flash point.

VI ACCIDENTAL RELEASE MEASURES

Spill and Leak Procedure Restrict access to area of spill. Provide ventilation and protective clothing if needed. Scrape-up sealant with cardboard or rag and place in a container.

Waste Disposal Review environmental regulations for disposal. Silicone wastes can often be incinerated in approved facilities. Solid waste may be sent to a designated landfill site.

VII HANDLING AND STORAGE

Storage Conditions Store in cool dry conditions. Keep container tightly sealed when not in use.

Handling Procedure No specific measures required. Do not inhale vapor or ingest sealant. Cured CSL product does not require special precautions.

VIII EXPOSURE CONTROL AND PERSONAL PROTECTION

Methyl ethyl ketoxime (MEKO) is released as a curing by-product when in contact with humid air.

EXPOSURE LIMIT OF CURING BY-PRODUCT

Component	OSHA PEL	ACGIH TLV	Other Limits
MEKO	None	None	10 ppm (STEL) 10 ppm (TWA)

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection Not required unless normal ventilation is inadequate.

Eye/Face Protection Chemical splash goggles

Skin Protection Gloves, coveralls, apron may be useful to prevent contamination of skin or clothing.

Resistance of Materials for Protective Clothing No specific data. Most rubbers and plastics are adequate.

Ventilation Requirements Local exhausts to provide sufficient removal of vapours.

IX PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Thixotropic paste
Odour	Almost odourless
Odour Threshold	Not Applicable
pH	Not determined
Boiling Point (°C)	Not Applicable
Freezing Point (°C)	Not Applicable
Vapor Pressure (mm Hg)	Negligible @ 25°C.
Vapor Density (Air = 1)	Not Applicable
VOC Concentration	47.69 g/L (0.398 lb/gallon)
Specific Gravity (Water = 1)	1.03
Solubility in Water	Insoluble
Solubility in Other Solvents	Soluble in Most Organic Solvents
Evaporation Rate	Not Applicable

MSDS of CSL 535 Oil Resistant Silicone Sealant/Adhesive

Decomposition Temperature Not determined

X STABILITY AND REACTIVITY

Product Stability Stable
 Hazardous Polymerization Will not occur
 Incompatible Materials **STRONG OXIDIZERS, CONCENTRATED ACIDS OR BASES** cause degradation of polymer. Boiling water may soften and weaken material.
 Hazardous Decomposition Products Combustion will produce silicon dioxide, carbon dioxide, carbon monoxide and nitrogen oxides. A component of this product can generate formaldehyde at approximately 150°C (300°F) and above in the atmosphere containing oxygen. Formaldehyde is a skin and respiratory sensitizer, eye and throat irritant, acute toxicant and potential carcinogen.

XI TOXICOLOGICAL INFORMATION

Toxicological Data LD50 of mixture (calculated) Ingestion/Rat 3810-4670 mg/kg

Evidence of reproductive effects of Octamethylcyclotetrasiloxane in laboratory animals at concentrations of 500 and 700 ppm

XII ECOLOGICAL INFORMATION

Sealant will release methyl ethyl ketoxime (MEKO) when in contact with water. MEKO has been determined to be biodegradable and has a static 96 hours LC₅₀ of 48 mg/L (bluegill) and a 48 hours EC₅₀ of 750 mg/L (daphnia).

XIII DISPOSAL CONSIDERATION

Not classified as Hazardous Waste.

Review environmental regulations to disposal. Silicone wastes can often be incinerated in approved facilities. Solid waste may be sent to a designated landfill site.

XIV TRANSPORT INFORMATION

TDG Information Not a regulated item.

XV REGULATORY INFORMATION

Risk Phrases R22 Harmful if swallowed.
 R36 Irritating to eyes.
 R43 May cause sensitization by skin contact.

Safety Phrases S23 Do not breath vapours
 S24/25 Avoid contact with skin and eyes
 S51 Use in well-ventilated areas

WHMIS Classification 1. CLASS D-Poisonous and Infectious Material
 Division 2- Other Toxic Effects
 Subdivision A- Very toxic material
 2. CLASS D-Poisonous and Infectious Material
 Division 2-Other Toxic Effects
 Subdivision B-Toxic material

RoHS Statement CSL 535 Oil Resistant Silicone Sealant/Adhesive does not contain Lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent Chromium,

MSDS of CSL 535 Oil Resistant Silicone Sealant/Adhesive

Polybrominated Biphenyls (PBBs) and Polybrominated Diphenyl Ethers (PBDEs) as listed in RoHS Directives.

TSCA Status

All ingredients of this product are listed on TSCA Inventory of Chemicals.

State of California
Safe Drinking Water
And Toxic Enforcement
Act 1986 (Proposition 65)

None of the ingredients of this product is listed on Proposition 65 list issued on December 2006.

Canadian DSL Status

All ingredients of this product are on the Canadian DSL.

XVI OTHER INFORMATION

Date Issued

August 9, 2007

Date Revised

March 30, 2010

Prepared By

Farooq Ahmed, Research and Development Manager

Emergency Contact

Baz Mistry, Laboratory Manager
or Farooq Ahmed, Research and Development Manager

REFERENCES

1. American Conference of Governmental Industrial Hygienists Inc., Documentation of the Threshold Limit Values (TLV) and Biological Exposures Indices, 5th Edition, 1986, Cincinnati, OH.
2. National Institute for Occupational Safety and Health, Registry of Toxic Effects of Chemical Substances.
3. Sigma-Aldrich Corp., USA, The Sigma-Aldrich Library of Chemical Safety Data, 1985.
4. Sittig, M., handbook of Toxic and Hazardous Chemicals and Carcinogens, 2nd Edition, 1985, Park Ridge, N.I.
5. Canadian Center for Occupational Health and Safety, CHEMINFO, Record #15E, #26E.
6. Material Safety Data Sheets from Cabot Corporation, Wacker-Chemie GMBH, General Filtration, Dow Corning, Union Carbide, Hoechst Canada, Honeywell Chemicals.
7. Canada's National Occupational Health & Safety Resources at www.ccohs.ca/oshanswers/legisl/whmis
8. Information from Health Canada Website at www.hc-sc.gc.ca/ohc-asc/interactiv/ohs-sgh/index_e.html
9. Information from United Nations Website at www.unsceo.org/trans/danger/publi/ghs/ghs_rev01/01files_e.html
10. Information about RoHS (Restriction of Use of Certain Hazardous Substances in Electrical and Electronic Equipments) was obtained from Website at www.rohs.gov.uk
11. Information about State of California Safe Drinking Water and Toxic Enforcement Act 1986 (Proposition 65) was obtained from Website at www.oehha.ca.gov/prop65.html

The information contained herein has been prepared in good faith to comply with applicable federal and provincial (state) law(s). However, no warranty of any kind is given or implied and CSL Silicones Inc. will not be responsible for any damages, losses or injuries that may result from the use of any information contained here.

CSL SILICONES INC.

144 Woodlawn Road West, Guelph, Ontario Canada N1H 1B5
Telephone: (519) 836-9044 FAX: (519) 836-9069

NONE.



CommCool™ HD

SECTION 1: Product Information and Company Identification

Common Name : CommCool™ HD
Product Code : 7205
Material Use : Semi-Synthetic Metalworking Fluid
Supplier/Manufacturer : Commonwealth Oil, 2080 Ferriss Rd N., Harrow, ON, N0R 1G0
In Case of Emergency : CANUTEC (613) 996-6666 COLLECT 24 Hr

SECTION 2: Composition, Information on Ingredients

Component	CAS Registry No.	OSHA PEL	ACGIH TLV	Concentration %
Fatty Acid Amide Mixture	Mixture	Not Available	Not Available	< 9.0
Petroleum Sulfonate	Mixture	Not Available	Not Available	< 5.0
Corrosion Inhibitor Additive	Mixture	5mg/m ³	5mg/m ³	< 2.5
ETHYLENE OXIDE-NONYLPHENOL POLYMER	9016-45-9	Not Available	Not Available	< 2.5
Triethanolamine	102-71-6	5mg/m ³	5mg/m ³	< 3.0

See Section 8 for Exposure Limits.
 See Section 11 for Toxicological Data.

SECTION 3: Hazards Identification

Chemical Family : Complex Mixture
Physical State : Liquid
Emergency Overview : No specific Hazard
 Use with care.
 Follow good Industrial Hygiene practices.
Routes of Entry : Dermal contact, eye contact, inhalation and ingestion.
Potential Acute Health Effects : No known significant effects or critical hazards.
Potential Chronic Health Effects : Not applicable for carcinogenic, mutagenic, or teratogenic effects.
Medical Conditions Aggravated by Overexposure : Repeated or prolonged exposure is not known to aggravate medical condition.
Overexposure Signs and Symptoms : Not available

See Toxicological Information (section 11)

SECTION 4: First Aid Measures

Eye Contact : Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention if irritation occurs and or persists.
Skin Contact : Remove any contaminated clothing. Wash with soap and water. Get medical attention if irritation occurs and or persists.
Inhalation : If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion : Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious patient. If large amounts of this material are swallowed, call a physician immediately.

Notes to Physician : Not available

SECTION 5: Fire Fighting Measures

Flammability of the Product : Not Applicable (Water-Based Product)
Auto Ignition Temperature : Not Applicable (Water-Based Product)
Flash Point (COC) : Not Applicable (Water-Based Product)
Flammable Limits : No Data
Hazardous Combustion Products : These products are not combustible.
Fire Hazards in Presence of various Substances : Not Applicable. Slightly flammable in the presence of heat and complete water evaporation.
Explosion Hazard in Presence of various substances : Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.
Fire Fighting Media and Instructions : SMALL FIRE: Use dry chemical powder
 LARGE FIRE: Use water spray, fog or foam. Do not use water jet.
Protective Clothing (Fire) : Fire fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear. Be sure to use a MSHA/NIOSH approved respirator or equivalent.
Special Remarks on Fire Hazards : Container explosion may occur under fire conditions or when heated. Cool closed containers exposed to fire with water.

SECTION 6: Accidental Release Measures

Small Spill and Leak : Absorb with an inert material and put spilled material in an appropriate waste disposal.
Large Spill and Leak : Absorb with an inert material and put spilled material in an appropriate waste disposal. Do not allow any potentially contaminated water including rainwater, runoff from fire fighting or spills enter any waterway, sewer or drain.

Note: See section 8 for personal protective equipment and section 13 for waste disposal.

SECTION 7: Handling and Storage

Handling : Use proper grounding procedures as material can accumulate static charges. Avoid breathing vapors or spray mists. Avoid contact with eyes, skin and clothing. After handling, always wash hands thoroughly with soap and water. Do not cut, weld, heat or pressurize containers. Use with adequate ventilation.
Storage : Keep container tightly closed. Store in a dry, cool and well-ventilated area. Do not cut, weld, heat or pressurize empty containers. Do not store near open flames or sources of ignition.

SECTION 8: Exposure Controls, Personal Protection

Engineering Controls : Good general ventilation should be sufficient to control airborne levels. Local exhaust is recommended to control emissions at the source. Mechanical ventilation is recommended for confined areas. Ensure eyewash stations and safety showers are proximal to the work station location.

Personal Protection

Eyes : Safety glasses or goggles are advisable.
Body : Lab coat or suitable protective clothing is advisable.
Respiratory : A respirator is not needed under normal and intended usage conditions.
Hands : Chemical resistant or oil impervious gloves are advisable.
Feet : Shoes (as required by the work place).

Personal Protection in Case of a Large Spill : Splash goggles. Full suit. Vapor respirator. Boots. Chemical resistant gloves. A self contained breathing apparatus should be used to avoid inhalation of the product.

Exposure Limits : 5 mg/m³ ACGIH TLV (United States and Canada)
 Oil Mist – Severely refined TLV-TWA: 5 mg/m³ Form: Mist
 Consult local authorities for your acceptable exposure limits.

SECTION 9: Physical and Chemical Properties

Physical State : Liquid
 Appearance and Color : Clear to slightly turbid blue/green solution.
 Odour : Mild pleasant odour.
 pH : 10 ±10%
 Flash Point (COC) : Not Applicable
 Boiling/Condensation Point : 100°C (212°F)
 Pour Point °C (°F) : Not Established
 Freezing Point : 0°C (32°F)
 Specific Gravity : 1.00 (Water = 1)
 Density, lbs./Gallon : 8.32
 Vapor Pressure : Not Applicable
 Vapor Density : Not Applicable
 % Volatility, By volume : Similar to Water
 Evaporation Rate : Negligible (nBuAc=1)
 VOC : Not Applicable
 Viscosity cSt @ 40°C : Not Established
 Solubility in Water : Soluble

SECTION 10: Stability and Reactivity

Stability and Reactivity : The product is stable.
 Incompatibility with : Reactive with strong oxidizing agents.
 Various Substances
 Hazardous Decomposition : Fumes, smoke, and carbon monoxide and sulphur oxides in case of
 Products incomplete combustion.
 Hazardous Polymerization : Will not occur

SECTION 11: Toxicological Information

Acute Toxicity Data : Avoid breathing mist and fumes. Proper ventilation should be utilized.
 Chronic Effects on Humans:
 Eyes : Slightly irritating, but will not injure eye tissue. May irritate the eyes.
 Skin : Low toxicity. Frequent or prolonged contact may irritate the skin.
 Ingestion : Low toxicity.
 Inhalation : Negligible hazard at normal temperatures. Elevated temperatures or mechanical action may form vapors, mists or fumes, which may be irritating to the eyes, nose, throat and lungs. Avoid breathing vapors or mists.
 Other Toxic Effects on Humans : Low
 Special Remarks on Toxicity : Low
 to Animals
 Special Remarks on Other Toxic : None reported.
 Effects on Humans

SECTION 12: Ecological Information

BOD and COD : Not Established
 Biodegradability/OECD : Not Established
 Mobility : Not Established
 Products of Degradation : Not Established
 Toxicity of the Products of Biodegradation : Not Established

Special Remarks on the Products of Biodegradation : Not Established

SECTION 13: Disposal Considerations

Waste Information : Waste should be disposed of in accordance to local, federal and state environmental control regulations.

Consult your local or regional authorities.

SECTION 14: Transport Information

Regulatory Information	UN Number	Proper Shipping Name	Class	Packing Group	Label	Additional Information
United States (DOT)	Not Regulated	-	-	-	-	-
Canada (TDG)	Not Regulated	-	-	-	-	-
Mexico (NOM-004-SCT2-1994)	Not Regulated	-	-	-	-	-
IMDG Code	Not Regulated	-	-	-	-	-
IATADGR Class	Not Regulated	-	-	-	-	-

NAERG (North American Emergency Response Guide): Not applicable

SECTION 15: Regulatory Information

United States

U.S. Federal Regulations : TSCA 8(b) inventory: All components listed.
 SARA 302/304/311/312 extremely hazardous substances: No products found.
 SARA 302/304 emergency planning and notification: No products found.
 SARA 302/304/311/312 hazardous chemicals: No products found.
 SARA 311/312 MSDS distribution – chemical inventory – hazard identification: No products found.
 Clean Water Act (CWA) 307: No products found.
 Clean Water Act (CWA) 311: No products found.
 Clean Air Act (CAA) 112 accidental release prevention: No products found.
 Clean Air Act (CAA) 112 regulated flammable substances: No products found.
 Clean Air Act (CAA) 112 regulated toxic substances: No products found.

State Regulations : California prop. 65: No products found.

Canada

WHMIS (Canada) : Class D2B WHMIS (Canada)
 CEPA DSL: All components listed.

Mexico

Classification

Health: 1

Flammability: 0

Reactivity: 0

Special:

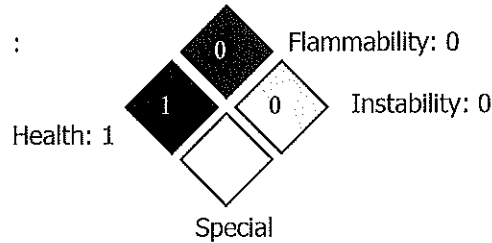
SECTION 16: Other Information

Label Requirements : USE WITH CARE.
USE AS DIRECTED.

Hazardous Material Information System (U.S.A.) :

Health	1
Fire Hazard	0
Reactivity	0
Personal Protection	B

National Fire Protection Association (U.S.A.) :



Date of Issue : March 12, 2014

Date of Previous Issue : July 18, 2011

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Prepared By: Commonwealth Oil Technical Services Department (Tel: 1-519-738-3503)



CommCool™ 8800

SECTION 1: Product Information and Company Identification

Common Name : CommCool™ 8800
Product Code : 7223
Material Use : Semi-Synthetic Metalworking Fluid
Supplier/Manufacturer : Commonwealth Oil, 2080 Ferriss Rd N., Harrow, ON, N0R 1G0
In Case of Emergency : CANUTEC (613) 996-6666 COLLECT 24 Hr

SECTION 2: Composition, Information on Ingredients

Component	CAS Registry No.	OSHA PEL	ACGIH TLV	Concentration %
Monoethanolamine	141-43-5	3 ppm	3 ppm	< 4.0
Triethanolamine	102-71-6	5 mg/m ³	5 mg/m ³	< 2.0
Diethylene Glycol Monobutyl Ether	112-34-5		20 ppm	< 3.0

See Section 8 for Exposure Limits.
 See Section 11 for Toxicological Data.

SECTION 3: Hazards Identification

Chemical Family : Complex Mixture
Physical State : Liquid
Emergency Overview : No specific Hazard
 Use with care.
 Follow good Industrial Hygiene practices.
Routes of Entry : Dermal contact, eye contact, inhalation and ingestion.
Potential Acute Health Effects : No known significant effects or critical hazards.
Potential Chronic Health Effects : Not applicable for carcinogenic, mutagenic, or teratogenic effects.
Medical Conditions Aggravated by Overexposure : Repeated or prolonged exposure is not known to aggravate medical condition.
Overexposure Signs and Symptoms : Not available

See Toxicological Information (section 11)

SECTION 4: First Aid Measures

Eye Contact : Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 20 minutes. Cold water may be used. Get medical attention if irritation occurs and or persists.
Skin Contact : Remove any contaminated clothing. Wash with soap and water. Get medical attention if irritation occurs and or persists.
Inhalation : If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Ingestion : Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious patient. If large amounts of this material are swallowed, call a physician immediately.
Notes to Physician : Not available

SECTION 5: Fire Fighting Measures

- Flammability of the Product** : Product generally will not burn
Auto Ignition Temperature : Not Determined
Flash Point (COC) : Not Determined
Flammable Limits : No Data
Hazardous Combustion Products : Oxides of carbon, nitrogen, boron.
Fire Hazards in Presence of various Substances : Do not mix with strong oxidants. Slightly flammable in the presence of high heat and complete water evaporation.
Explosion Hazard in Presence of various substances: Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.
Fire Fighting Media and Instructions : SMALL FIRE: Use dry chemical powder
 LARGE FIRE: Use water spray, fog or foam. Do not use water jet.
Protective Clothing (Fire) : Fire fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear. Be sure to use a MSHA/NIOSH approved respirator or equivalent.
Special Remarks on Fire Hazards : Container explosion may occur under fire conditions or when heated. Cool closed containers exposed to fire with water.

SECTION 6: Accidental Release Measures

- Small Spill and Leak** : Absorb with an inert material and put spilled material in an appropriate waste disposal.
Large Spill and Leak : Absorb with an inert material and put spilled material in an appropriate waste disposal.
 Do not allow any potentially contaminated water including rainwater, runoff from fire fighting or spills enter any waterway, sewer or drain.

Note: See section 8 for personal protective equipment and section 13 for waste disposal.

SECTION 7: Handling and Storage

- Handling** : Use proper grounding procedures as material can accumulate static charges. Avoid breathing vapors or spray mists. Avoid contact with eyes, skin and clothing. After handling, always wash hands thoroughly with soap and water. Do not cut, weld, heat or pressurize containers. Use with adequate ventilation.
Storage : Keep container tightly closed. Store in a dry, cool and well-ventilated area. Do not cut, weld, heat or pressurize empty containers. Do not store near open flames or sources of ignition.

SECTION 8: Exposure Controls, Personal Protection

- Engineering Controls** : Good general ventilation should be sufficient to control airborne levels. Local exhaust is recommended to control emissions at the source. Mechanical ventilation is recommended for confined areas. Ensure eyewash stations and safety showers are proximal to the work station location.

Personal Protection

- Eyes** : Safety glasses or goggles are advisable.
Body : Lab coat or suitable protective clothing is advisable.
Respiratory : A respirator is not needed under normal and intended usage conditions.
Hands : Chemical resistant or oil impervious gloves are advisable.
Feet : Shoes (as required by the work place).

- Personal Protection in Case of a Large Spill** : Splash goggles. Full suit. Vapor respirator. Boots. Chemical resistant gloves. A self contained breathing apparatus should be used to avoid inhalation of the product.

- Exposure Limits** : 5 mg/m³ ACGIH TLV (United States and Canada) Oil mists

- Oil Mist – Severely refined** TLV-TWA: 5 mg/m³ Form: Mist

Consult local authorities for your acceptable exposure limits.

SECTION 9: Physical and Chemical Properties

Physical State	: Liquid
Appearance and Color	: Transparent to slightly turbid blue solution.
Odour	: Mild pleasant odour.
pH	: 9.1 @ 5%
Flash Point (COC)	: Not Applicable
Boiling/Condensation Point	: 100°C (212°F)
Pour Point °C (°F)	: Not Established
Freezing Point	: 0°C (32°F)
Specific Gravity	: 1.05 (Water = 1)
Density, lbs./Gallon	: 8.7
Vapor Pressure	: Not Applicable
Vapor Density	: Not Applicable
% Volatility, by volume	: Similar to Water
Evaporation Rate	: Negligible (nBuAc=1)
VOC	: Not Determined
Viscosity cSt @ 40°C	: Not Determined
Solubility in Water	: Completely Soluble

SECTION 10: Stability and Reactivity

Stability and Reactivity	: The product is stable.
Incompatibility with Various Substances	: Reactive with strong oxidizing agents.
Hazardous Decomposition Products	: Fumes, smoke, and carbon monoxide and oxides of carbon, nitrogen and boron.
Hazardous Polymerization	: Will not occur

SECTION 11: Toxicological Information

Acute Toxicity Data	: Avoid breathing mist and fumes. Proper ventilation should be utilized.
Chronic Effects on Humans:	
Eyes	: Slightly irritating, but will not injure eye tissue. May irritate the eyes.
Skin	: Low toxicity. Frequent or prolonged contact may irritate the skin.
Ingestion	: Low toxicity.
Inhalation	: Negligible hazard at normal temperatures. Elevated temperatures or mechanical action may form vapors, mists or fumes, which may be irritating to the eyes, nose, throat and lungs. Avoid breathing vapors or mists.
Other Toxic Effects on Humans	: Low
Special Remarks on Toxicity to Animals	: Contains alkanolamine. Do not mix with or add nitrites as this could form nitrosamines, some of which are animal carcinogens.
Special Remarks on Other Toxic Effects on Humans	: None reported.

SECTION 12: Ecological Information

BOD and COD	: Not Established
Biodegradability/OECD	: Not Established
Mobility	: Not Established
Products of Degradation	: Not Established
Toxicity of the Products of Biodegradation	: Not Established
Special Remarks on the Products of Biodegradation	: Not Established

SECTION 13: Disposal Considerations

Waste Information : Waste should be disposed of in accordance to local, federal and state environmental control regulations.

Consult your local or regional authorities.

SECTION 14: Transport Information

Regulatory Information	UN Number	Proper Shipping Name	Class	Packing Group	Label	Additional Information
United States (DOT)	Not Regulated	-	-	-	-	-
Canada (TDG)	Not Regulated	-	-	-	-	-
Mexico (NOM-004-SCT2-1994)	Not Regulated	-	-	-	-	-
IMDG Code	Not Regulated	-	-	-	-	-
IATADGR Class	Not Regulated	-	-	-	-	-

NAERG (North American Emergency Response Guide): Not applicable

SECTION 15: Regulatory Information**United States**

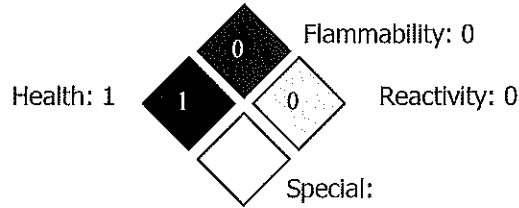
U.S. Federal Regulations : TSCA 8(b) inventory: All components listed.
 SARA 302/304/311/312 extremely hazardous substances: No products found.
 SARA 302/304 emergency planning and notification: No products found.
 SARA 302/304/311/312 hazardous chemicals: No products found.
 SARA 311/312 MSDS distribution – chemical inventory – hazard identification: No products found.
 Clean Water Act (CWA) 307: No products found.
 Clean Water Act (CWA) 311: No products found.
 Clean Air Act (CAA) 112 accidental release prevention: No products found.
 Clean Air Act (CAA) 112 regulated flammable substances: No products found.
 Clean Air Act (CAA) 112 regulated toxic substances: No products found.

State Regulations : California prop. 65: No products found.

Canada

WHMIS (Canada) : Class D2B WHMIS (Canada)
 CEPA DSL: All components listed.
 "This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations* and the MSDS contains all of the information required by the *Controlled Products Regulations*."

Mexico Classification :



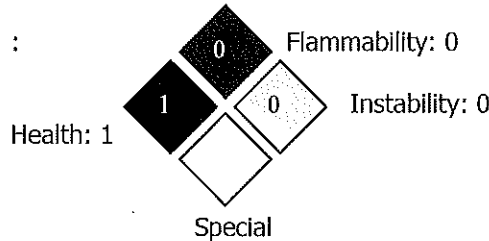
SECTION 16: Other Information

Label Requirements : USE WITH CARE.
USE AS DIRECTED.

Hazardous Material Information System (U.S.A.) :

HEALTH	1
FLAMMABILITY	0
PHYSICAL HAZARD	0
PERSONAL PROTECTION	B

National Fire Protection Association (U.S.A.) :



Date of Issue : July 8, 2013

Date of Previous Issue Notice to reader : New

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Authored By: Commonwealth Oil Technical Services Department (Tel: 1-519-738-3503)



Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. This Standard must be consulted for specific requirements.

U.S. Department of Labor

Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY (As Used on Label and List) UTILITY LIGHTER & REFILL	Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.
---	---

Section I

Manufacturer's Name BernzOmatic	Emergency Telephone Number 800-654-9011
Address (Number, Street, City, State, and ZIP Code) 1 Bernzomatic Drive	Telephone Number for Information 800-424-9300
Medina, NY 14103	Date Prepared June 11, 2011
	Signature of Preparer (optional)

Section II - Hazard Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Liquefied Petroleum Gas N-Butane, volume (CAS No. 106-97-8) Isobutane, volume (CAS No. 75-28-5)	1000 ppm 1000 ppm	1000 ppm 1000 ppm		22% 78%

Section III - Physical/Chemical Characteristics

Boiling Point:	-11.7°F	Specific Gravity (H ₂ O = 1):	0.5676
Vapor Pressure (mm Hg.):	Approx. 40 psig	Percent Volatile by Weight:	100%
Vapor Density (AIR = 1):	Greater than 2	Evaporation Rate (Butyl Acetate = 1):	Gas
Solubility in Water:	Less than 0.1% by weight @70°F.		
Appearance and Odor:	Liquefied compressed gas, flash evaporates at room temperature when released from can, colorless gas with essentially no odor.		

Section IV - Fire and Explosion Hazard Data



Flash Point (Method Used): Less than -117°F	Flammable Limits: Extremely Flammable (Reference - Consumer Product Commission, flame projection test for aerosol products, per 16 CFR500.45)	LEL 1.8	UEL 8.4
Extinguishing Media:			
If feasible, stop flow of gas. Use water to cool fire-exposed cans, surroundings and to protect personnel working on shut off. Water spray, dry powder or carbon dioxide can be directed at flame area, if gas flow cannot be stopped, to reduce fire intensity. DO NOT COMPLETELY EXTINGUISH FLAME UNLESS GAS FLOW IS SHUT OFF!			
Special Fire Fighting Procedures:			
Avoid possible accumulations of vapors at floor level, as vapor is heavier than air. Self-contained breathing apparatus and protective clothing should be worn in fighting fires involving chemicals. This product is extremely flammable at all times. Keep away from any sources of inadvertent ignition, including heat, fire, sparks, or flame.			
Unusual Fire and Explosion Hazards:			
This product presents an extreme fire hazard. Liquid very quickly evaporates, even at low temperatures, and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. This may include self-contained breathing Apparatus against the hazardous effects of normal products of combustion of oxygen deficiency. Petroleum gases are heavier than air and travel along the ground or into drains to possible distant ignition sources, causing an explosive flashback.			

Section V - Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable	Stable when stored as a liquid in cans under its own pressure.	Contact with sparks, open flame or any source of ignition.
Incompatibility (Materials to Avoid):			
Hazardous Decomposition or Byproducts: May produce carbon monoxide when oxidized with deficiency of oxygen.			
Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	N/A

Section VI - Health Hazard Data



Route(s) of Entry: Inhalation, skin contact, eye contact	Inhalation? YES	Skin? YES	Ingestion? NO	
Health Hazards (<i>Acute and Chronic</i>):				
Carcinogenicity:	NTP? Not listed as a carcinogen	IARC Monographs? Not listed as a carcinogen	ACGIH? Not listed as a carcinogen	OSHA Regulated? Not listed as a carcinogen
Signs and Symptoms of Exposure:				
<p>Inhalation: This product is an asphyxiate and may exhibit anesthetic properties at very high concentrations. Initial symptoms of exposure at these concentrations are disorientation, lack of coordination, rapid respiration, headache, and nausea. Continued exposure May result in unconsciousness, coma, and possible death.</p> <p>Skin Contact: Vapors are not irritating. Freeze burns or frostbite possible if skin is in prolonged contact with vaporizing liquid.</p> <p>Eye Contact: Same as skin contact.</p>				
Medical Conditions Generally Aggravated by Exposure:				
Respiratory related chronic illnesses (i.e. asthma etc.)				
Emergency and First Aid Procedures:				
<p>Inhalation: Remove to fresh air. Artificial respiration, consult physician.</p> <p>Skin Contact: Wash with soap and water. Remove soaked clothing to avoid prolonged skin contact.</p> <p>Eye Contact: Flush eyes well with running water for 15 minutes.</p> <p>Ingestion: N/A, product is gaseous at normal temperature and pressure.</p>				
Warning:				
This fuel and by-products of combustion of this fuel, contain chemicals known to the State of California to cause cancer, birth defects, and other reproductive harm.				

Section VII - Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled:	Protect from any ignition source, keep away from heat, fire, sparks, or flame. Ventilate area well. Avoid accumulation of vapor at low levels.
Waste Disposal Method:	Dispose of in accordance with all local, state and federal regulations. Do not puncture or incinerate.
Precautions to Be taken in Handling and Storing:	Do not store where temperature may exceed 120°F. Store away from, fire, sparks, or flame. Store in suitable area for hazardous materials storage.
Other Precautions:	

Section VIII - Control Measures



Respiratory Protection (<i>Specify Type</i>): If TLV is exceeded wear NIOSH-approved self-contained breathing device or respirator.	
Ventilation: Must be adequate to maintaining airborne concentrations below established exposure limits, particularly at floor level as vapors are heavier than air.	
Local Exhaust- Mechanical (General)- Special- Other-	
Protective Gloves: None needed for normal use. Thermal insulated gloves when handling if prolonged exposure expected.	Eye Protection : Safety glasses or goggles recommended
Other Protective Clothing or Equipment:	
Work/Hygienic Practices:	

Section IX - Special Precautions

Precautions to be taken in Handling and Storing: Do not use near heat, fire, flame or sparks. Avoid excessive breathing of vapor. Do not spray in direction of body. Use only in accordance with directions.
Other Precautions :

Section X – Transportation Information

D.O.T Shipping Classification	Butane, 2.1
Technical Name:	
Hazard Class:	2.1
IMO Hazard Class and No.:	Non-hazardous
Un No.:	1057
Packing Group:	
Emergency Response Guide Number:	
Type D.O.T. Label Required Information:	Flammable Gas
Other:	TSCA Statement: All the components of this product are in compliance with the Toxic Substances Control Act (TSCA) and are either listed on the TSCA Inventory or otherwise exempted from listing.



Section XI – Additional Information

DISCLAIMER: Judgments as to the suitability of information herein or the purchaser's purposes are necessarily the purchaser's responsibility. Reasonable care has been taken in the preparation of this material, but there are NO WARRANTIES, NO REPRESENTATIONS, AND NO RESPONSIBILITY AS TO THE ACCURACY OR THE SUITABILITY OF THIS INFORMATION FOR ANY PURCHASER'S USE OR FOR ANY CONSEQUENCE TO USE.

This Material Safety Data Sheet is offered solely for your information, consideration and investigation. Bernzomatic provides no warranties; either express or implied, and assumes no responsibilities for the accuracy or completeness of the data contained in this document. The data in this Material Safety Data Sheet relates only to this product and does not relate to use in combination with any other material or in any process.

NONE.

Material Safety Data Sheet



ARCAL 21/BLUESHIELD™ 6/ BLUESHIELD 7/
BLUESHIELD 8/BLUESHIELD 21/ ALFLUX™

1. Product and company identification

Product name : ARCAL 21/BLUESHIELD™ 6/ BLUESHIELD 7/ BLUESHIELD 8/BLUESHIELD 21/
ALFLUX™

Material uses : Shielding gas for arc welding.

Supplier/Manufacturer : Air Liquide Canada Inc.
1250, René-Lévesque West, Suite 1700
Montreal, QC
H3B 5E6
www.airliquide.ca
1-800-817-7697

Prepared by : IHS

In case of emergency : (514) 878-1667

2. Hazards identification

Physical state : Gas.

Color : Colorless.

Odor : Odorless.

Emergency overview

Signal word : CAUTION!

Hazard statements : HIGH PRESSURE GAS. GAS REDUCES OXYGEN AVAILABLE FOR BREATHING.
CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON
ANIMAL DATA.

Precautions : Contains gas under pressure. In a fire or if heated, a pressure increase will occur and
the container may burst or explode. At very high concentrations, can displace the
normal air and cause suffocation from lack of oxygen. Do not puncture or incinerate
container. Do not enter storage areas and confined spaces unless adequately
ventilated. Avoid breathing gas. Use only with adequate ventilation. Keep container
tightly closed and sealed until ready for use.

Routes of entry : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

Inhalation : At very high concentrations, can displace the normal air and cause suffocation from lack
of oxygen.

Ingestion : As this product is a gas, refer to the inhalation section.

Skin : Contact with rapidly expanding gas may cause burns or frostbite.

Eyes : Contact with rapidly expanding gas may cause burns or frostbite.

Potential chronic health effects

Chronic effects : Contains material that may cause target organ damage, based on animal data.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

2. Hazards identification

- Fertility effects** : No known significant effects or critical hazards.
- Target organs** : Contains material which may cause damage to the following organs: lungs, cardiovascular system, upper respiratory tract, central nervous system (CNS).

Over-exposure signs/symptoms

- Inhalation** : No specific data.
- Ingestion** : No specific data.
- Skin** : No specific data.
- Eyes** : No specific data.
- Medical conditions aggravated by over-exposure** : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

3. Composition/information on ingredients

Name	CAS number	%
argon	7440-37-1	65-96
Carbon dioxide	124-38-9	4-35

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : As this product is a gas, refer to the inhalation section.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Antidote information

Product/ingredient name	Antidote information
No antidote information known	

- Notes to physician** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5. Fire-fighting measures

- Flammability of the product** : Contains gas under pressure. In a fire or if heated, a pressure increase will occur and the container may burst or explode.
- Extinguishing media**
- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8). If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. Never fix a leak while the system is under pressure. If leak is on container or container valve, contact the closest Air Liquide Canada location.
- Environmental precautions** : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Methods for cleaning up**
- Small spill** : Immediately contact emergency personnel. Stop leak if without risk.
- Large spill** : Immediately contact emergency personnel. Stop leak if without risk. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Contains gas under pressure. Avoid contact with eyes, skin and clothing. Avoid breathing gas. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Valve protection caps must remain in place unless cylinder is secured with valve outlet piped to usage point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure regulator when connecting cylinder to lower pressure piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow to the cylinder. Do not tamper with (valve) safety device. Close valve after each use and when empty.

7. Handling and storage

Storage : Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of non combustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 52°C/125°F. Cylinders must be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in - first out" inventory system to prevent full cylinders being stored for excessive periods of time. Store in accordance with local regulations. Store in a segregated and approved area. Store in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Protect from sunlight. Keep container tightly closed and sealed until ready for use.

8. Exposure controls/personal protection

<u>Occupational exposure limits</u>		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredient	List name	ppm	mg/m ³	Other	ppm	mg/m ³	Other	ppm	mg/m ³	Other	Notations
Carbon dioxide	US ACGIH 6/2013	5000	9000	-	30000	54000	-	-	-	-	[2]
	AB 4/2009	5000	9000	-	30000	54000	-	-	-	-	
	BC 7/2013	5000	-	-	15000	-	-	-	-	-	
	ON 1/2013	5000	9000	-	30000	54000	-	-	-	-	
	QC 12/2012	5000	9000	-	30000	54000	-	-	-	-	

[2]Oxygen Depletion [Asphyxiant]

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Engineering measures : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. If operating conditions cause high gas concentrations to be produced or any recommended or statutory exposure limit is exceeded, use an air-fed respirator or self-contained breathing apparatus. The gas can cause asphyxiation without warning by replacing the oxygen in the air. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

8. Exposure controls/personal protection

Eyes	: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.
Skin	: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Environmental exposure controls	: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. Physical and chemical properties

Physical state	: Gas.
Flash point	: Not available.
Auto-ignition temperature	: Not available.
Flammable limits	: Not available.
Color	: Colorless.
Odor	: Odorless.
pH	: Not available.
Boiling/condensation point	: Not available.
Melting/freezing point	: Not available.
Density	: 1.7893 to 1.8457 g/l
Vapor pressure	: Not available.
Vapor density	: Not available.
Odor threshold	: Not available.
Evaporation rate	: Not available.
Viscosity	: Not available.
Solubility	: Partially soluble in the following materials: cold water.
LogK_{ow}	: Not available.

10. Stability and reactivity

Chemical stability	: The product is stable.
Conditions to avoid	: No specific data.
Incompatible materials	: No specific data.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous polymerization will not occur.

11. Toxicological information

Acute toxicity

Not available.

Chronic toxicity

Not available.

Irritation/Corrosion

Not available.

Sensitizer

Not available.

Carcinogenicity

Classification

Not available.

Mutagenicity

Not available.

Teratogenicity

Not available.

Reproductive toxicity

Not available.

12. Ecological information

Ecotoxicity : No known significant effects or critical hazards.

Aquatic ecotoxicity

Not available.

Persistence/degradability

Not available.

Partition coefficient: n-octanol/water : Not available.

Bioconcentration factor : Not available.

Mobility : Not available.

Toxicity of the products of biodegradation : Not available.

Other adverse effects : No known significant effects or critical hazards.

13. Disposal considerations




Waste disposal : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Empty pressure vessels should be returned to the supplier. Waste packaging should be recycled.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

13. Disposal considerations

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
TDG Classification	UN1956	COMPRESSED GAS, N.O.S. (argon, Carbon dioxide)	2.2	-		<u>Explosive Limit and Limited Quantity Index</u> 0.12 <u>Passenger Carrying Road or Rail Index</u> 75
IMDG Class	UN1956	COMPRESSED GAS, N.O.S. (argon, Carbon dioxide)	2.2	-		<u>Emergency schedules (EmS)</u> F-C, S-V
IATA-DGR Class	UN1956	Compressed gas, n.o.s. (argon, Carbon dioxide)	2.2	-		<u>Passenger and Cargo Aircraft</u> Quantity limitation: 75 kg Packaging instructions: 200 <u>Cargo Aircraft Only</u> Quantity limitation: 150 kg Packaging instructions: 200 <u>Limited Quantities - Passenger Aircraft</u> Quantity limitation: Forbidden Packaging instructions: Forbidden

PG* : Packing group

15. Regulatory information

United States inventory (TSCA 8b) : All components are listed or exempted.

WHMIS (Canada) : Class A: Compressed gas.

Canadian lists

Canadian NPRI : None of the components are listed.

CEPA Toxic substances : The following components are listed: Carbon dioxide

Canada inventory : All components are listed or exempted.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

International regulations

International lists :

- Australia inventory (AICS)**: All components are listed or exempted.
- China inventory (IECSC)**: All components are listed or exempted.
- Japan inventory**: Not determined.
- Korea inventory**: All components are listed or exempted.
- Malaysia Inventory (EHS Register)**: Not determined.
- New Zealand Inventory of Chemicals (NZIoC)**: All components are listed or exempted.
- Philippines inventory (PICCS)**: All components are listed or exempted.
- Taiwan inventory (CSNN)**: All components are listed or exempted.

15. Regulatory information

Chemical Weapons : Not listed
 Convention List Schedule
 I Chemicals

Chemical Weapons : Not listed
 Convention List Schedule
 II Chemicals

Chemical Weapons : Not listed
 Convention List Schedule
 III Chemicals

16. Other information

Label requirements : HIGH PRESSURE GAS. GAS REDUCES OXYGEN AVAILABLE FOR BREATHING. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

Hazardous Material :
 Information System (U.S.A.)

Health	*	0
Flammability		0
Physical hazards		2
Personal protective equipment		G

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

Date of issue : 6/1/2014.
 Date of previous issue : 6/15/2011.
 Version : 6

Indicates information that has changed from previously issued version.

Notice to reader

THE INFORMATION, RECOMMENDATIONS AND DATA CONTAINED IN THIS DOCUMENT ARE INTENDED TO BE USED BY PROPERLY TRAINED AND QUALIFIED PERSONNEL ONLY AND AT THEIR SOLE RISKS AND DISCRETION. THE INFORMATION, RECOMMENDATIONS AND DATA HEREIN CONTAINED ARE DERIVED FROM SOURCES WHICH WE BELIEVE TO BE RELIABLE. HOWEVER, AIR LIQUIDE CANADA INC. MAKES NO REPRESENTATION AND GIVES NO WARRANTY OF ANY KIND WHATSOEVER WITH RESPECT TO THEIR ACCURACY OR COMPLETENESS AND ASSUMES NO LIABILITY FOR DAMAGES OR LOSS ARISING DIRECTLY OR INDIRECTLY FROM THEIR USE, WHETHER PROPER OR IMPROPER.

Notes

ALFLUX™ : Trademark of L'Air Liquide Canada Inc.
 ARCAL™ : Trademark of L'Air Liquide S.A.
 BLUESHIELD™ : Trademark of L'Air Liquide Canada Inc.

98-13813-6/98-19152-6

Material Safety Data Sheet

SYNDURO^{TM/MC} SHB 460



000003001217

Version 2.0

Revision Date 2015/03/10

Print Date 2015/12/15

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : SYNDURO^{TM/MC} SHB 460

Product code : SYND460DRM, SYND460, SYND460DCT

Manufacturer or supplier's details

Petro-Canada Lubricants Inc.
2310 Lakeshore Road West
Mississauga ON L5J 1K2
Canada

Emergency telephone number : Suncor Energy: +1 403-296-3000;
Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : Multifunctional Synthetic (PAO) lubricant for use in air and inert gas compressors and gearboxes. These oils should NEVER be used in equipment compressing pure oxygen or other chemically active gases such as chlorine or hydrogen chloride. DO NOT USE in breathing air apparatus or medical equipment.

Prepared by : Product Safety: +1 905-804-4752

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	viscous liquid
Colour	Pale yellow.
Odour	Hydrocarbon.

Potential Health Effects

Primary Routes of Entry : Eye contact
Ingestion
Inhalation
Skin contact

Aggravated Medical Condition : None known.

Carcinogenicity:

IARC

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Material Safety Data Sheet

SYNDURO ^{TM/MC} **SHB 460**

00003001217

Version 2.0

Revision Date 2015/03/10

Print Date 2015/12/15



ACGIH

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

No hazardous ingredients

SECTION 4. FIRST AID MEASURES

- If inhaled : Move to fresh air.
Artificial respiration and/or oxygen may be necessary.
Seek medical advice.
- In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash skin thoroughly with soap and water or use recognized skin cleanser.
Wash clothing before reuse.
Seek medical advice.
- In case of eye contact : Remove contact lenses.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Obtain medical attention.
- If swallowed : Rinse mouth with water.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Never give anything by mouth to an unconscious person.
Seek medical advice.
- Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : No information available.

Material Safety Data Sheet

SYNDURO ^{TM/MC} **SHB 460**

000003001217



Version 2.0

Revision Date 2015/03/10

Print Date 2015/12/15

- Specific hazards during firefighting : Cool closed containers exposed to fire with water spray.
- Hazardous combustion products : Carbon oxides (CO, CO₂), nitrogen oxides (NO_x), phosphorus oxides (PO_x), smoke and irritating vapours as products of incomplete combustion.
- Further information : Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Material can create slippery conditions.
- Environmental precautions : If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods and materials for containment and cleaning up : Prevent further leakage or spillage if safe to do so.
Remove all sources of ignition.
Soak up with inert absorbent material.
Non-sparking tools should be used.
Ensure adequate ventilation.
Contact the proper local authorities.

SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid contact with skin, eyes and clothing.
Do not ingest.
Keep away from heat and sources of ignition.
Keep container closed when not in use.
- Conditions for safe storage : Store in original container.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep in a dry, cool and well-ventilated place.
Keep in properly labelled containers.
To maintain product quality, do not store in heat or direct sunlight.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Material Safety Data Sheet

SYNDURO ^{TM/MC} **SHB 460**

000003001217

Version 2.0

Revision Date 2015/03/10

Print Date 2015/12/15



Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type : organic vapour filter

Hand protection
Material : neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R).

Remarks : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eye protection : Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Protective measures : Wash hands and face before breaks and immediately after handling the product.
Wash contaminated clothing before re-use.
Ensure that eyewash station and safety shower are proximal to the work-station location.

Hygiene measures : Remove and wash contaminated clothing and gloves, including the inside, before re-use.
Wash face, hands and any exposed skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : viscous liquid

Colour : Pale yellow.

Odour : Hydrocarbon.

Odour Threshold : No data available

pH : No data available

Pour point : -39 °C (-38 °F)

Material Safety Data Sheet

SYNDURO ^{TM/MC} **SHB 460**

000003001217



Version 2.0

Revision Date 2015/03/10

Print Date 2015/12/15

Boiling point/boiling range	: No data available
Flash point	: 266 °C (511 °F) Method: Cleveland open cup
Fire Point	: 296 °C (565 °F)
Auto-Ignition Temperature	: No data available
Evaporation rate	: No data available
Flammability	: Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available
Density	: 0.857 kg/l (15 °C / 59 °F)
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: 452 cSt (40 °C / 104 °F) 46.9 cSt (100 °C / 212 °F)
Explosive properties	: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	: No data available
Incompatible materials	: Reactive with oxidising agents, acids, alkalis and reducing agents.
Hazardous decomposition products	: May release COx, NOx, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Material Safety Data Sheet

SYNDURO ^{TM/MC} **SHB 460**

000003001217



Version 2.0

Revision Date 2015/03/10

Print Date 2015/12/15

Information on likely routes of exposure : Eye contact
Ingestion
Inhalation
Skin contact

Acute toxicity

Product:

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

Skin corrosion/irritation

Product:

Remarks: No data available

Serious eye damage/eye irritation

Product:

Remarks: No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Aspiration toxicity

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish : Remarks: No data available

Material Safety Data Sheet

SYNDURO ^{TM/MC} **SHB 460**

000003001217



Version 2.0

Revision Date 2015/03/10

Print Date 2015/12/15

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Offer surplus and non-recyclable solutions to a licensed disposal company.
Waste must be classified and labelled prior to recycling or disposal.
Send to a licensed waste management company.
Dispose of as hazardous waste in compliance with local and national regulations.
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulation

IATA-DGR

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

49 CFR

Not regulated as a dangerous good

TDG

Material Safety Data Sheet

SYNDURO ^{TM/MC} **SHB 460**

000003001217

Version 2.0

Revision Date 2015/03/10

Print Date 2015/12/15



Not regulated as a dangerous good

Special precautions for user

Not applicable

SECTION 15. REGULATORY INFORMATION

WHMIS Classification : Not Rated

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

The components of this product are reported in the following inventories:

DSL	On the inventory, or in compliance with the inventory
TSCA	All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.
EINECS	On the inventory, or in compliance with the inventory
IECSC	On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

NONE.

Product Name: Argon

MSDS No.: E-4563-L

Date: Oct 15, 2013

Praxair Material Safety Data Sheet

1. Chemical Product and Company Identification

Product Name: Argon	Trade Name: Argon
Product Use: Metal industry: Welding and cutting of metals.	
Chemical Name: Argon	Synonym: Shielding Gas, Argon 40
Chemical Formula: Ar	Chemical Family: (Rare Gas) Noble Gas
Telephone: Emergencies: * 1-800-363-0042	Supplier /Manufacture: Praxair Canada Inc. 1 City Centre Drive Suite 1200 Mississauga, ON L5B 1M2
	Phone: 905-803-1600 Fax: 905-803-1682

**Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier or Praxair sales representative.*

2. Hazards Identification

Emergency Overview

CAUTION! High-pressure gas. Can cause rapid suffocation. May cause dizziness and drowsiness. Self-contained breathing apparatus may be required by rescue workers.

ROUTES OF EXPOSURE: Inhalation.

EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:

INHALATION: Asphyxiant. Effects are due to lack of oxygen. Moderate concentrations may cause headaches, drowsiness, dizziness, excitation, excess salivation, vomiting, and unconsciousness. Lack of oxygen can kill.

SKIN CONTACT: No harm expected.

SKIN ABSORPTION: No harm expected.

SWALLOWING: This product is a gas at normal temperature and pressure.

EYE CONTACT: No harm expected.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE:

A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions. WORKING WITH WELDING AND CUTTING MAY CREATE ADDITIONAL HEALTH HAZARDS.

FUMES AND GASES can be dangerous to your health and may cause serious lung disease.*

Keep your head out of the fumes. Do not breathe fumes and gases caused by the process. Use enough ventilation, local exhaust, or both to keep fumes and gases from your breathing zone and the general area. The type and amount of fumes and gases depend on the equipment and supplies used. Possibly dangerous materials may be found in fluxes, coatings, gases, metals etc. Get a Material Safety Data Sheet (MSDS) for every material used. Air samples can be used to find out what respiratory protection is needed. Short term overexposure to fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat, or eyes.

***NOTES TO PHYSICIAN:**

Acute: Gases, fumes, and dusts may cause irritation to the eyes, lungs, nose, and throat. Some toxic gases associated with welding and related processes may cause pulmonary edema, asphyxiation, and death. Acute overexposure may include signs and symptoms such as watery eyes, nose and throat irritation, headache, difficulty breathing frequent coughing, or chest pains.

Chronic: Protracted inhalation of air contaminants may lead to their accumulation in the lungs, a condition which may be seen as dense areas on chest x-rays. The severity of change is proportional to the length of exposure. The changes seen are not necessarily associated with symptoms or signs of reduced lung function or disease. In addition, the changes on x-rays may be caused by non-work related factors such as smoking, etc.

OTHER EFFECTS OF OVEREXPOSURE:

None known.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

Repeated or prolonged exposure is not known to aggravate any medical condition.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:

None currently known.

CARCINOGENICITY:

Not listed as carcinogen by OSHA, NTP or IARC.

3. Composition and Information on Ingredients

COMPONENTS	CAS NUMBER	CONCENTRATION % by Mole
Argon	7440-37-1	100

4. First Aid Measures

INHALATION:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

SKIN CONTACT:

Flush with water.

SWALLOWING:

This product is a gas at normal temperature and pressure.

EYE CONTACT:

Flush with water.

NOTES TO PHYSICIAN:

This product is inert. There is no specific antidote. Treatment of over-exposure should be directed at the control of symptoms and the clinical condition.

5. Fire Fighting Measures

FLAMMABLE : No. **IF YES, UNDER WHAT CONDITIONS?** Not applicable.

EXTINGUISHING MEDIA:

This material cannot catch fire. Use media appropriate for surrounding fire.

PRODUCTS OF COMBUSTION:

None.

PROTECTION OF FIREFIGHTERS:

CAUTION! High-pressure gas. Asphyxiant. Effects are due to lack of oxygen. Evacuate all personnel from danger area. Immediately deluge cylinders with water from maximum distance until cool; then move them away from fire area if without risk. Shutoff leak if without risk. Arcs and sparks can ignite combustion. Self-contained breathing apparatus may be required by rescue workers. Refer to American National Standard Z49.1 "Safety in Welding and Cutting" for fire prevention information during the use of welding and allied procedures.

SPECIFIC PHYSICAL AND CHEMICAL HAZARDS:

Heat of fire can build pressure in cylinder and cause it to rupture. No part of cylinder should be subjected to a temperature higher than 52 C. Cylinders containing this mixture are equipped with a pressure relief device. (Exceptions may exist where authorized by TDG Regulations.)

SENSITIVITY TO IMPACT:

Avoid impact against container.

SENSITIVITY TO STATIC DISCHARGE:

Not applicable.

PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS:

Firefighters should wear self-contained breathing apparatus and full fire-fighting turnout gear.

FLAMMABLE LIMITS IN AIR, % by volume:

LOWER: Not applicable. **UPPER:** Not applicable.

FLASH POINT: Not applicable.

AUTOIGNITION TEMPERATURE: Not applicable.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Personal Precautions:

CAUTION! High-pressure gas. Evacuate all personnel from danger area. Use self-contained breathing apparatus where needed. Shut off flow if you can do so without risk. Ventilate area or move cylinder to a well-ventilated area. Test for sufficient oxygen, especially in confined spaces, before allowing reentry.

Environmental Precautions:

Slowly release into atmosphere. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, provincial, and local regulations. If necessary, call your local supplier for assistance.

7. Handling and Storage

PRECAUTIONS TO BE TAKEN IN HANDLING:

Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Open valve slowly. If valve is hard to open, discontinue use and contact your supplier. For other precautions, see section 16.

For additional information on storage and handling, refer to Compressed Gas Association (CGA) pamphlet P-1, *Safe Handling of Compressed Gases in Containers*, available from the CGA. Refer to section 16 for the address and phone number along with a list of other available publications.

PRECAUTIONS TO BE TAKEN IN STORAGE:

Store and use with adequate ventilation. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Store only where temperature will not exceed 52 C. Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.

OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE:

High pressure gas. Use piping and equipment adequately designed to withstand pressures to be encountered. **Gas can cause rapid suffocation due to oxygen deficiency.** Store and use with adequate ventilation. Close valve after each use; keep closed even when empty. **Prevent reverse flow.** Reverse flow into cylinder may cause rupture. Use a check valve or other protective device in any line or piping from the cylinder. **Never work on a pressurized system.** If there is a leak, close the cylinder valve. Blow the system down in an environmentally safe manner in compliance with all federal, provincial, and local laws, then repair the leak. **Never place a compressed gas cylinder where it may become part of an electrical circuit.**

Fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being worked and the process, procedure, equipment, and supplies used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being worked (such as paint, plating, or galvanizing), the number of workers and the volume of the work area, the quality and amount of ventilation, the position of the worker's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapours from cleaning and degreasing activities). One recommended way to determine the composition and quantity of fumes and gases to which the workers are exposed is to take an air sample from inside the worker's helmet if worn or in the worker's breathing zone. See ANSI/AWSF1.1, available from the American Welding Society, 550 N.W. Le Jeune Rd. Miami, FL 33126. Read and understand the manufacturer's instructions and the precautionary label on the product. See American National Standard Z49.1, "Safety in Welding and Cutting" published by the American Society.

RECOMMENDED PUBLICATIONS:

Additional information on storage, handling, and use of this product is provided in **NFPA 55: Standard for the Storage, Use, and Handling of Compressed and Liquefied Gases in Portable Cylinders**, published by the National Fire Protection Association.

See also Praxair publication P-14-153, *Guidelines for Handling Gas Cylinders and Containers*. Obtain from your local supplier.

8. Exposure Controls/Personal Protection

INGREDIENTS	CAS NUMBER	LD ₅₀ (Species & Routes)	LC ₅₀ (Rat, 4 hrs.)	Exposure Limits
Argon	7440-37-1	Not applicable.	Not available.	Simple asphyxiant.

VENTILATION/ENGINEERING CONTROLS:

LOCAL EXHAUST: Use a local exhaust system, if necessary, to maintain an adequate supply of oxygen in the worker's breathing zone. Adequate ventilation must keep worker exposure below applicable exposure limits for fumes, gases, and other by-products of welding with argon.

MECHANICAL (General): General exhaust ventilation may be acceptable if it can maintain an adequate supply of air.

SPECIAL: None.

OTHER: None.

PERSONAL PROTECTION:

RESPIRATORY PROTECTION: Use fume respirator or air supplied respirator when working in confined space or where local exhaust or ventilation does not keep exposure below TLV. Select in accordance with provincial regulations, local bylaws or guidelines. Selection should also be based on the current CSA standard Z94.4, "Selection, Care and Use of Respirators". Respirators should also be approved by NIOSH and MSHA.

SKIN PROTECTION: Wear work gloves when handling cylinders.

EYE PROTECTION: Wear goggles with filter lens. Provide protective screens and goggles, if necessary to protect others.

Select in accordance with the current CSA standard Z94.3, "Industrial Eye and Face Protection", and any provincial regulations, local bylaws or guidelines.

OTHER PROTECTIVE EQUIPMENT: Metatarsal shoes for cylinder handling. Protective clothing where needed. Cuffless trousers should be worn outside the shoes. Select in accordance with the current CSA standard Z195, "Protective Foot Wear" and any provincial regulations, local bylaws or guidelines.

9. Physical and Chemical Properties

PHYSICAL STATE: Gas. (Compressed Gas)	FREEZING POINT: -189.2°C (-308.6°F)	pH:	Not available.
BOILING POINT: -185.9°C (-302.6°F)	VAPOUR PRESSURE: Not applicable.	MOLECULAR WEIGHT:	39.95 g/mole
SPECIFIC GRAVITY: Not applicable. LIQUID (Water = 1)	SOLUBILITY IN WATER: Partially soluble in cold water.		
SPECIFIC GRAVITY: 1.38 g/ml @ 21.1C	EVAPORATION RATE: Not available. (Butyl Acetate=1):	COEFFICIENT OF WATER/OIL DISTRIBUTION:	Not applicable.
VAPOUR DENSITY: 0.0016 g/ml @ 21.1C	% VOLATILES BY VOLUME: 100% (v/v).	ODOUR THRESHOLD:	Odourless.

APPEARANCE & ODOUR: Colourless. Odourless.

10. Stability and Reactivity

STABILITY:	The product is stable.
CONDITIONS OF CHEMICAL INSTABILITY:	None.
INCOMPATIBILITY (materials to avoid):	None currently known. Product is inert.
HAZARDOUS DECOMPOSITION PRODUCTS:	None.
HAZARDOUS POLYMERIZATION:	Will not occur.
CONDITIONS TO AVOID:	None.
CONDITIONS OF REACTIVITY:	None.

11. Toxicological Information

ACUTE DOSE EFFECTS: Argon is a simple asphyxiant. The welding process may generate hazardous fumes and gases. (See sections 10 and 16.)

STUDY RESULTS:

NO KNOWN EFFECT.

12. Ecological Information

No adverse ecological effects expected. This product does not contain any Class I or Class II ozone-depleting chemicals. The components of this mixture are not listed as marine pollutants by TDG Regulations.

13. Disposal Considerations

WASTE DISPOSAL METHOD: Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier.

14. Transport Information

TDG/IMO SHIPPING NAME: Argon, Compressed

HAZARD CLASS:	CLASS 2.2: Non-flammable, and Non-toxic gas.	IDENTIFICATION #:	UN1006	PRODUCT REPORTABLE QUANTITY (PRQ): Any accidental release in a quantity that could pose a danger to public safety or any sustained release of 10 minutes or more.
----------------------	---	--------------------------	--------	---

SHIPPING LABEL(s): Non-flammable, non-toxic gas

PLACARD (When Required): Non-flammable, non-toxic gas

SPECIAL SHIPPING INFORMATION:

Cylinders should be transported in a secure position, in a well-ventilated vehicle. Cylinders transported in an enclosed, non-ventilated compartment of a vehicle can present serious safety hazards.

15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, provincial, and local regulations. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS (Canada): CLASS A: Compressed gas.

This product is on the DSL list.

International Regulations:

EINECS: Not available.

DSCL (EEC): This product is not classified according to the EU regulations.

International Lists: No products were found.

16. Other Information

MIXTURES:

When two or more gases, or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist, or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

HAZARD RATING SYSTEM:

HMIS RATINGS:

HEALTH 0

FLAMMABILITY 0

PHYSICAL HAZARD 2

STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:

THREADED: CGA-295

PIN-INDEXED YOKE: Not available.

ULTRA-HIGH-INTEGRITY CONNECTION: Not available.

Use the proper CGA connections. **DO NOT USE ADAPTERS.** Additional limited-standard connections may apply. See CGA pamphlets V-1 and V-7 listed below.

Ask your supplier about free Praxair safety literature as referred to in this MSDS and on the label for this product. Further information about this product can be found in the following pamphlets published by the Compressed Gas Association, Inc. (CGA), 4221 Walney Road, 5th Floor, Chantilly, VA 20151-2923, Telephone (703) 788-2700, Fax (703) 961-1831, website: www.cganet.com.

- AV-1 Safe Handling and Storage of Compressed Gas
- G-11.1 Commodity Specification for Argon
- P-1 Safe Handling of Compressed Gases in Containers
- P-14 Accident Prevention in Oxygen-Rich, Oxygen-Deficient Atmosphere
- SB-2 Oxygen-Deficient Atmospheres
- V-1 Compressed Gas Cylinder Valve Inlet and Outlet Connections
- V-7 Standard Method of Determining Cylinder Valve Outlet Connections for Industrial Gas Mixtures
- Handbook of Compressed Gases, Fourth Edition

Praxair asks users of this product to study this MSDS and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this MSDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

PREPARATION INFORMATION:

Product Name: Argon

MSDS# E-4563-L

Date: Oct 15, 2013

DATE: October 15, 2013

DEPARTMENT: Safety and Environmental Services

TELEPHONE: 905-803-1600

The opinions expressed herein are those of qualified experts within Praxair Canada Inc. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of use of the product are not within the control of Praxair Canada Inc., it is the user's obligation to determine the conditions of safe use of the product.

Praxair Canada Inc. requests the users of this product to study this Material Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

Praxair and the *Flowing Airstream* design are trademarks of
Praxair Canada Inc.

Other trademarks used herein are trademarks or registered trademarks of their respective owners.



Praxair Canada Inc.
1 City Centre Drive
Suite 1200
Mississauga, ON L5B 1M2

Safety Data Sheet



Revision Number: 001.3

Issue date: 09/11/2014

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: **LOCTITE LB 8023 MAR GR** IDH number: 275026
ANTISIEZE known as LOCTITE MAR
GR A/S 16OZ EN

Product type: Lubricant Item number: 34026
Restriction of Use: None identified Region: United States

Company address: **Henkel Corporation**
One Henkel Way
Rocky Hill, Connecticut 06067

Contact information:
Telephone: (860) 571-5100
MEDICAL EMERGENCY Phone: Poison Control Center
1-877-671-4608 (toll free) or 1-303-592-1711
TRANSPORT EMERGENCY Phone: CHEMTREC
1-800-424-9300 (toll free) or 1-703-527-3887
Internet: www.henkelna.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER: CAUSES SEVERE SKIN BURNS AND EYE DAMAGE.

HAZARD CLASS	HAZARD CATEGORY
SKIN CORROSION	1C
SERIOUS EYE DAMAGE	1

PICTOGRAM(S)



Precautionary Statements

Prevention: Do not breathe vapors, mist, or spray. Wash thoroughly after handling. Wear protective gloves, eye protection, and face protection.

Response: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to remove. Continue rinsing. Immediately call a poison control center or physician. Wash contaminated clothing before reuse.

Storage: Store locked up.

Disposal: Dispose of contents and/or container according to Federal, State/Provincial and local governmental regulations.

Classification complies with OSHA Hazard Communication Standard (29 CFR 1910.1200) and is consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Component(s)	CAS Number	Percentage*

IDH number: 275026

Product name: LOCTITE LB 8023 MAR. GR ANTISIEZE known as LOCTITE MAR GR A/S 16OZ EN

Petroleum Based grease	Unknown	30 - 60
Calcium oxide	1305-78-8	10 - 30
Graphite	7782-42-5	10 - 30
Petroleum distillates, hydrotreated, light naphthenic	64742-53-6	5 - 10
Distillates (petroleum), hydrotreated heavy naphthenic	64742-52-5	5 - 10
Octadecanoic acid	57-11-4	0.1 - 1
Boron oxide (B ₂ O ₃)	1303-86-2	0.1 - 1

* Exact percentage is a trade secret. Concentration range is provided to assist users in providing appropriate protections.

4. FIRST AID MEASURES

Inhalation:	Move to fresh air. If symptoms develop and persist, get medical attention.
Skin contact:	Immediately flush skin with plenty of water (using soap, if available). Remove contaminated clothing and footwear. If symptoms develop and persist, get medical attention. Wash clothing before reuse.
Eye contact:	Get medical attention. Immediately flush eyes with plenty of water for at least 15 minutes.
Ingestion:	Get medical attention. Keep individual calm. Do not induce vomiting; contains petroleum distillates and/or aromatic solvents.
Symptoms:	See Section 11.

5. FIRE FIGHTING MEASURES

Extinguishing media:	Water spray (fog), foam, dry chemical or carbon dioxide.
Special firefighting procedures:	Wear a self-contained breathing apparatus with a full face piece operated in pressure-demand or other positive pressure mode. In case of fire, keep containers cool with water spray.
Unusual fire or explosion hazards:	None
Hazardous combustion products:	Oxides of nitrogen. Oxides of carbon.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions:	Do not allow product to enter sewer or waterways.
Clean-up methods:	Scrape up as much material as possible. Clean residue with soap and water. Store in a partly filled, closed container until disposal. Refer to Section 8 "Exposure Controls / Personal Protection" prior to clean up.

7. HANDLING AND STORAGE

Handling:	Use only with adequate ventilation. Prevent contact with eyes, skin and clothing. Do not breathe vapor and mist. Wash thoroughly after handling. Keep container closed.
Storage:	Keep container closed. Keep in a cool, well ventilated area.

For information on product shelf life contact Henkel Customer Service at (800) 243-4874.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous Component(s)	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Petroleum Based grease	5 mg/m ³ TWA mist	5 mg/m ³ TWA mist	None	None
Calcium oxide	2 mg/m ³ TWA	5 mg/m ³ PEL	None	None
Graphite	2 mg/m ³ TWA Respirable fraction.	5 mg/m ³ PEL Respirable fraction. 15 mg/m ³ PEL Total dust. 15 MPPCF TWA	None	None
Petroleum distillates, hydrotreated, light naphthenic	None	500 ppm (2,000 mg/m ³) PEL 5 mg/m ³ PEL Mist.	None	None
Distillates (petroleum), hydrotreated heavy naphthenic	5 mg/m ³ TWA mist 10 mg/m ³ STEL mist	5 mg/m ³ TWA mist 500 ppm (2,000 mg/m ³) PEL 5 mg/m ³ PEL Mist.	None	None
Octadecanoic acid	10 mg/m ³ TWA	None	None	None
Boron oxide (B2O3)	10 mg/m ³ TWA	15 mg/m ³ PEL Total dust.	None	None

Engineering controls:	Provide adequate local exhaust ventilation to maintain worker exposure below exposure limits.
Respiratory protection:	Observe OSHA regulations for respirator use (29 CFR 1910.134). Use NIOSH approved respirator if there is potential to exceed exposure limit(s).
Eye/face protection:	Safety goggles or safety glasses with side shields. Safety showers and eye wash stations should be available.
Skin protection:	Use impermeable gloves and protective clothing as necessary to prevent skin contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Paste
Color:	Black
Odor:	Mild
Odor threshold:	Not available.
pH:	Not available.
Vapor pressure:	Not available.
Boiling point/range:	Not available.
Melting point/ range:	Not available.
Specific gravity:	1.2648
Vapor density:	Not available.
Flash point:	Not applicable
Flammable/Explosive limits - lower:	Not available.
Flammable/Explosive limits - upper:	Not available.
Autoignition temperature:	Not available.
Evaporation rate:	Not available.
Solubility in water:	Insoluble
Partition coefficient (n-octanol/water):	Not available.
VOC content:	< 3 %; 38.4 g/l EPA Method 24
Viscosity:	Not available.
Decomposition temperature:	Not available.

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions of storage and use.
Hazardous reactions:	Will not occur.
Hazardous decomposition products:	Oxides of carbon. Oxides of nitrogen.
Incompatible materials:	Strong acids and strong bases. Strong oxidizing agents. Strong reducing agents.
Reactivity:	Not available.
Conditions to avoid:	Keep away from heat, ignition sources and incompatible materials.

11. TOXICOLOGICAL INFORMATION

Relevant routes of exposure: Skin, Inhalation, Eyes

Potential Health Effects/Symptoms

Inhalation:	Not a hazard under normal conditions of use.
Skin contact:	Causes skin burns.
Eye contact:	Causes serious eye damage.
Ingestion:	Principal hazard of ingestion is aspiration into the lungs and subsequent pneumonitis.

Hazardous Component(s)	LD50s and LC50s	Immediate and Delayed Health Effects
Petroleum Based grease.	None	No Data
Calcium oxide	None	Irritant, Corrosive, Eyes
Graphite	None	Lung
Petroleum distillates, hydrotreated, light naphthenic	None	Irritant
Distillates (petroleum), hydrotreated heavy naphthenic	None	Irritant
Octadecanoic acid	Oral LD50 (RAT) = 4.6 g/kg	Irritant
Boron oxide (B2O3)	None	Blood, Central nervous system, Gastrointestinal, Irritant, Kidney, Liver, Lung, Metabolic, Nuisance dust, Skin, Vascular

Hazardous Component(s)	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Petroleum Based grease	No	No	No
Calcium oxide	No	No	No
Graphite	No	No	No
Petroleum distillates, hydrotreated, light naphthenic	No	No	No
Distillates (petroleum), hydrotreated heavy naphthenic	No	No	No
Octadecanoic acid	No	No	No
Boron oxide (B2O3)	No	No	No

12. ECOLOGICAL INFORMATION

Ecological information: Not available.

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Follow all local, state, federal and provincial regulations for disposal.
Hazardous waste number: Not a RCRA hazardous waste.

14. TRANSPORT INFORMATION

The transport information provided in this section only applies to the material/formulation itself, and is not specific to any package/configuration.

U.S. Department of Transportation Ground (49 CFR)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

International Air Transportation (ICAO/IATA)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

Water Transportation (IMO/IWDG)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status: All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.
TSCA 12 (b) Export Notification: None above reporting de minimis
CERCLA/SARA Section 302 EHS: None above reporting de minimis
CERCLA/SARA Section 311/312: Immediate Health, Delayed Health
CERCLA/SARA Section 313: None above reporting de minimis
California Proposition 65: No California Proposition 65 listed chemicals are known to be present.

Canada Regulatory Information

CEPA DSL/NDSL Status: All components are listed on or are exempt from listing on the Canadian Domestic Substances List.

16. OTHER INFORMATION

This safety data sheet contains changes from the previous version in sections: New Safety Data Sheet format.

Prepared by: Lou Fabrizio, Regulatory Affairs Specialist
Issue date: 09/11/2014

DISCLAIMER: The data contained herein are furnished for information only and are believed to be reliable. However, Henkel Corporation and its affiliates ("Henkel") does not assume responsibility for any results obtained by persons over whose methods Henkel has no control. It is the user's responsibility to determine the suitability of Henkel's products or any production methods mentioned herein for a particular purpose, and to adopt such precautions as may be advisable for the protection of property and persons against any hazards that may be involved in the handling and use of any Henkel's products. In light of the foregoing, Henkel specifically disclaims all warranties, express or implied, including warranties of merchantability and fitness for a particular purpose, arising from sale or use of Henkel's products. Henkel further disclaims any liability for consequential or incidental damages of any kind, including lost profits.

98-04324-6



Safety Data Sheet
Talon Compressor & Air Tool Lubricant
Revision Date: 9/15/15

Prepared according to Global Harmonized System (GHS) standards

SECTION 1

CHEMICAL PRODUCT IDENTIFICATION

Fastenal Company
2001 Theurer Boulevard
Winona, MN 55987

Tel: 763-417-1238 - Non-Emergency Questions

Product Trade Name:

Talon Compressor & Air Tool Lubricant

CAS Number: Mixture
Synonyms/Other: N/A
Part Number(s): 0409873, 0409875, 0409877, 0409876, 0409874, 0409872
Recommended Use: Lubricant
Restrictions on Use: Not Determined.
Created Date: 6/3/2015
Preparation/Revision Date: 9/15/2015
Emergency Phone Number: 1-800-424-9300 (CHEMTREC)
SDS CODE: 12159

SECTION 2

HAZARD IDENTIFICATION

Appearance: Clear, Light Yellow
Odor: Petroleum
Classification: Hazardous to the aquatic environment (acute hazard) category 3
Target Organs: Not applicable.
Pictogram(s): None required.
Signal Word: None required.
Hazard Statement: H412 - Harmful to aquatic life with long lasting effects
Other Hazards: Not determined.
Prevention: P273 - Avoid release to the environment
Response: None required.
Storage Procedures: None required.
Disposal: P501 - Dispose of contents and container in accordance with federal, state, and local
Other: See section 11 for complete health hazard information.

SECTION 3

COMPOSITION OF INGREDIENTS

Component	CAS Number	Percentage (by weight)
Zinc alkylidithiophosphate	Proprietary	0.1-1.0%
Butylated phenol	128-39-2	0.1-1.0%
Aryl phosphite	101-02-0	<0.1%

The balance of components do not contribute to the overall classification of the fluid, according to the GHS Standard.

SECTION 4**FIRST AID MEASURES**

Eye Contact:	If irritation occurs, cautiously rinse eyes with lukewarm, gently flowing water for 5 minutes, while holding the eyelids open. If eye irritation persists: Get medical advice/attention.
Skin Contact:	Call a doctor if you feel unwell.
Inhalation:	Get medical advice or attention if you feel unwell or are concerned.
Ingestion:	If you feel unwell or concerned: Get medical advice/attention. Rinse mouth. Do NOT induce vomiting. If vomiting occurs naturally, lie on your side, in the recovery position.
Other:	No additional information

SECTION 5**FIRE FIGHTING MEASURES**

Flash Point:	Not determined.
Flammable limits:	Not determined.
Extinguishing media:	Use dry chemical, alcohol foam, all purpose AFFF or carbon dioxide to extinguish fire.
Special firefighting procedures:	DO NOT direct a solid stream of water or foam into hot, burning pools of liquid since this may cause frothing and increase fire intensity. Frothing can be violent and possibly endanger any firefighter standing too close to the burning liquid. Use water spray to cool fire exposed containers and structures until fire is out if it can be done with minimal risk. Avoid spreading burning material with water used for cooling purposes. Wear full firefighting turn-out gear (full Bunker gear), and respiratory protection (SCBA).
Unusual fire & explosion hazards:	Dense smoke may be generated while burning. Toxic fumes, gases or vapors may evolve on burning. High temperatures may create heavy flammable vapors that may settle along ground level and low spots to create an invisible fire hazard.
Byproducts of combustion:	Fires involving this product may release oxides of carbon, phosphorus, nitrogen and sulfur; reactive hydrocarbons and irritating vapors.
Autoignition temperature:	Not determined.
Explosion data:	Not determined. Care should always be exercised in dust/mist areas.
Other:	Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

SECTION 6**ACCIDENTAL RELEASE MEASURES**

Spill control procedures (land):	Immediately turn off or isolate any source of ignition (pilot lights, electrical equipment, flames, heaters, etc.). Evacuate area and ventilate. Personnel wearing proper protective equipment should contain spill immediately with inert materials (sand, earth, chemical spill pads of cotton) by forming dikes. Dikes should be placed to contain spill in a manner that will prevent material from entering sewers and waterways. Large spill, once contained, may be picked up using explosion proof, non-sparking vacuum pumps, shovels, or buckets, and disposed of in suitable containers for disposal. Clean up residue with an appropriate solvent. If a large spill occurs notify appropriate authorities. In case of road spill or accident contact Chem-Trec (800-424-9300).
Spill control procedures (water):	Try to contain large spills with floating booms to prevent spill from spreading. Remove from surface by skimming or with suitable adsorbents. If a large spill occurs notify appropriate authorities (normally the National Response Center or Coast Guard at 800-424-8802).
Waste disposal method:	Do not empty into drains. All disposals must comply with federal, state, and local regulations. The material, if spilled or discarded may be a regulated waste. Refer to state and local regulations. Department of Transportation (DOT) regulations may apply for transporting this material when spilled. See Section 14.
Other:	CAUTION - If spilled material is cleaned up using a regulated solvent, the resulting waste mixture will be regulated.

SECTION 7

HANDLING AND STORAGE

- Handling procedures:** Keep containers closed when not in use. Do not transfer to unmarked containers. Empty containers retain product residue which may exhibit hazards of material, therefore do not pressurize, cut, glaze, weld, or use for any other purposes. Return drums to reclamation centers for proper cleaning and reuse. Handling temperatures should not exceed 60°C (140°F) to minimize danger of burns. Open containers carefully in a well ventilated area or use appropriate respiratory protection. Wash thoroughly after handling.
- Storage procedures:** Store containers away from heat, sparks, open flame, or oxidizing materials. Extended storage at excessive temperatures may produce odorous and toxic fumes from product decomposition.
- Additional information:** No additional information.

SECTION 8

EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product:

	OSHA TWA	OSHA STEL	ACGIH TWA
Contains highly refined petroleum oil	*5 mg/m ³ (PEL)	*10 mg/m ³	*5 mg/m ³ (TLV)

* Exposure limits not defined. Limits used are for, "oil mist".

TWA – Time Weighted Average is the employee's average airborne exposure in any 8-hour work shift of a 40-hour work week which shall not be exceeded.

STEL – Short Term Exposure Limit is the employee's 15-minute time weighted average exposure which shall not be exceeded at any time during a work day unless another time limit is specified.

All base oils, including additive carriers, contain <3.0% DMSO extractable material.

- Personal protection:** Applicable mainly to persons in repeated contact situations such as packaging of product, service/maintenance, and cleanup/spill control personnel.
- Respiratory protection:** None required if ventilation is adequate. Otherwise a respiratory protection program meeting OSHA 1910.134 and ANSI Z88.2 requirements must be followed. Where misting may occur, wear an MSHA/NIOSH approved (or equivalent) half-mask form dust/mist air purifying respirator.
- Eye protection:** Eye protection is strongly recommended. Wear safety glasses with side shields or vented/splash proof goggles (ANSI Z87.1 or approved equivalent).
- Hand protection:** Impervious, chemically resistant gloves such as neoprene or nitrile rubber to avoid skin sensitization and absorption.
- Other protection:** Use of an apron and overboots of chemically impervious materials such as neoprene or nitrile rubber is recommended based on level of activity and exposure. If handling hot material use insulated protective equipment. Launder soiled clothes. Properly dispose of contaminated leather articles and other materials which cannot be decontaminated.
- Local control measures:** Use adequate ventilation when working with material in an enclosed area. Mechanical methods such as fume hoods or area fans may be used to reduce localized vapor/mist areas. If vapor or mist is generated when the material handled, adequate ventilation in accordance with good engineering practice must be provided to maintain concentrations below the specified exposure. Eyewash stations and showers should be available in areas where this material is used and stored.
- Other:** Consumption of food and drink should be avoided in work areas where product is present. Always wash hands and face with soap and water before eating, drinking or smoking.

SECTION 9**PHYSICAL AND CHEMICAL PROPERTIES**

Appearance:	Clear, Light Yellow
Odor:	Petroleum
Odor threshold:	Not determined.
pH:	Not applicable.
Melting/Freezing point:	Not determined.
Initial boiling point:	Not determined.
Boiling range:	Not determined.
Flash point:	207°C
Evaporation rate:	Not determined.
Flammability:	Not determined.
Upper flammable limit:	Not determined.
Lower flammable limit:	Not determined.
Vapor pressure:	Not determined.
Vapor density:	Not determined.
Relative density:	0.870 @ 15.6°C
Solubility:	Negligible in water, miscible in most petroleum solvents.
Partition Coefficient:	Not determined.
Auto-ignition temperature:	Not determined.
Decomposition temperature:	Not determined.
Viscosity:	31 cSt @ 40°C
Other	Not applicable.

SECTION 10**STABILITY AND REACTIVITY****Reactivity**

Chemical stability:	Material is chemically stable at room temperatures and pressure.
Hazardous polymerization:	Will not occur.
Conditions to avoid:	Avoid high temperatures and product contamination.
Incompatibility with other materials:	Avoid contact with acids and strong oxidizing materials.
Decomposition products:	Smoke, carbon monoxide, carbon dioxide, and other aldehydes of incomplete combustion. Oxides of carbon, nitrogen, and sulfur; reactive hydrocarbons and irritating vapors.
Other:	Not applicable.

SECTION 11**TOXICOLOGICAL INFORMATION****Acute toxicity (LD50) *See note at the bottom of the section**

Oral:	>5000 mg/kg
Dermal:	>5000 mg/kg
Inhalation:	>20.0 mg/l
Skin irritation:	Non-irritant
Eye irritation:	Non-irritant
Dermal sensitization:	Not expected to have a sensitizing effect.
Respiratory sensitization:	Not expected to have a sensitizing effect.
Aspiration Hazard:	Not applicable



Chronic Toxicity

Mutagenicity: Not suspected of causing genetic defects
Carcinogenicity: Not suspected of causing cancer.
Reproductive toxicity: Not expected to have adverse effects on reproduction.
STOT-single exposure: Not expected to have adverse effects.
STOT-repeated exposure: Not expected to have long term adverse effects.
Other: *All data in this section is based off calculations from Part 3 of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) utilizing information from the constituent components.

SECTION 12 ECOLOGICAL INFORMATION

Environmental toxicity

Fish: > 100 mg/l.
Invertebrates: > 100 mg/l.
Aquatic plants: > 100 mg/l.
Microorganism: > 100 mg/l.
Persistence/Degradability: This product is not expected to be readily biodegradable.
Bioaccumulation: Not determined.
Mobility in soil: Not determined.
Other: All classifications are based on calculations in Part 4 of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) utilizing information from the constituent components.

SECTION 13 DISPOSAL CONSIDERATIONS

Waste disposal: This product unadulterated by other materials can be classified as a non-hazardous waste. Depending on use, used product may be regulated. Dispose of in a licensed facility. Do not discharge product in to sewer system. Dispose of containers by crushing or puncturing, so as to prevent unauthorized use of used containers. Waste management should be in full compliance with federal, state, and local laws.
Other: The transportation, storage, treatment and disposal of RCRA waste material must be conducted in compliance with 40 CFR 262, 263, 264, 268 and 270. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this SDS incomplete, inaccurate or otherwise inappropriate.

SECTION 14 TRANSPORT INFORMATION

Land Transport (DOT): Not Regulated.
Proper Shipping Name: Not Applicable.
Land Transport (TDG): Not Regulated.
Proper Shipping Name: Not Applicable.
Sea Transport (IMDG): Not Regulated.
Proper Shipping Name: Not Applicable.
Air Transport (IATA): Not Regulated.
Proper Shipping Name: Not Applicable.
Other: Not Applicable.

SECTION 15 REGULATORY INFORMATION

Federal Regulation

Clean water act/oil: Under Section 311 of the Clean Water Act (40 CFR 110) and the Oil Pollution Control Act of 1990, this material is considered an oil. Any spill or discharges that produce a visible sheen or film on surface of water, or in waterways, ditches, or sewers leading to surface water must be reported. Contact the National Response Center at 800-424-8802.

TSCA: All components of this material are listed in the U.S. TSCA Inventory.

Other TSCA: Not applicable.

SARA title III: Section 302/304 extremely hazardous substances:
 None.

Section 311, 312 hazard categorization:

Acute (immediate health effects):	NO
Chronic (delayed health effects):	NO
Fire (hazard):	NO
Reactivity (hazard):	NO
Pressure (sudden release hazard):	NO

Section 313 toxic chemicals:
 No components present are at or greater than the de minimis (minimum reportable) concentration requirements for reporting.

CERCLA: For stationary/moving sources – reportable quantity (due to): Not hazardous due to the petroleum exclusion.

State Regulations

Right-to-know Not determined.

California Proposition 65 This product is known to cause cancer and/or birth defects, or other reproductive harm. According to the Safety Drinking Water and Toxic Enforcement Act of 1986.

Other: A release of this product, as supplied, is exempt from reporting under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). However, releases may be reportable to the Nation Response Center under the Clean Water Act, 33 U.S.C. 1321(b)(3) and (5) - see head of Section 15. Failure to report may result in substantial civil and criminal penalties.

Recommend contacting the local authorities in the event of any type of spill to determine local reporting requirements and also to aid in the cleanup.

SECTION 16 OTHER INFORMATION

	NFPA 704	NPCA-HMIS	KEY
HEALTH:	1	1	0 = Minimal
FIRE:	1	1	1 = Slight
REACTIVITY:	0	0	2 = Moderate
SPECIFIC HAZARD:	None	N/A	3 = Serious
PROTECTION INDEX:	N/A	B	4 = Severe

Version: II

INFORMATION PROVIDED IN THIS SDS IS CONSIDERED ACCURATE AND RELIABLE BASED ON INFORMATION ISSUED FROM INTERNAL AND OUTSIDE SOURCES TO THE BEST OF THE AUTHORS' KNOWLEDGE. HOWEVER, THE AUTHOR'S MAKE NO REPRESENTATIONS, GUARANTEES OR WARRANTIES, EXPRESSED OR IMPLIED, OF MERCHANTABILITY OR FITNESS FOR THE PARTICULAR PURPOSE, REGARDING THE ACCURACY OF SUCH INFORMATION OR THE RESULT TO BE OBTAINED FROM THE USE THEREOF, OR AS TO THE SUFFICIENCY OF THE INFORMATION HEREIN PRESENTED. THE AUTHORS ASSUME NO RESPONSIBILITY FOR INJURY TO RECIPIENT OR TO THIRD PERSONS OR FOR ANY DAMAGE TO ANY PROPERTY AND RECIPIENT ASSUMES ALL SUCH RISKS.

Revisions / Comments: Section 15 update 9/15/2015

Product Name: Acetylene

MSDS No.: E-4559-M

Date: Oct 15, 2013

NONE.

Praxair Material Safety Data Sheet

1. Chemical Product and Company Identification

Product Name: Acetylene	Trade Name: Acetylene
Product Use: Metal industry: Welding and cutting of metals.	
Chemical Name: Acetylene	Synonym: Acetylen, Ethine, Ethyne, Narcylene
Chemical Formula: C ₂ H ₂	Chemical Family: Alkyne
Telephone: Emergencies: * 1-800-363-0042	Supplier /Manufacture: Praxair Canada Inc. 1 City Centre Drive Suite 1200 Mississauga, ON L5B 1M2
	Phone: 905-803-1600 Fax: 905-803-1682

**Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier or Praxair sales representative.*

2. Hazards Identification

Emergency Overview

DANGER! Flammable gas under pressure. Can form explosive mixtures with air. Fusible plugs in top, bottom, or valve melt at 98 - 104 C. Do not discharge at pressures above 103 kPa. May cause dizziness and drowsiness. Self-contained breathing apparatus may be required by rescue workers. At normal temperature and pressure, commercial acetylene is a colourless gas with a distinctive garlic-like odour.

ROUTES OF EXPOSURE: Inhalation.

EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:

- INHALATION:** Asphyxiant. Effects are due to lack of oxygen. Moderate concentrations may cause headaches, drowsiness, dizziness, excitation, excess salivation, vomiting, and unconsciousness. The vapour from a liquid (acetone) release may also cause incoordination and abdominal pain. Lack of oxygen can kill.
- SKIN CONTACT:** No harm expected. Liquid (acetone) may cause frostbite.
- SKIN ABSORPTION:** No harm expected. Liquid (acetone) may cause frostbite.
- SWALLOWING:** An unlikely route of exposure, but frostbite of the lips and mouth may result from contact with the liquid (acetone). If swallowed, the liquid may cause nausea.
- EYE CONTACT:** Vapour containing acetone may cause irritation. Liquid (acetone) may cause irritation and frostbite.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE:

NOTE: Acetylene cylinders are filled with a porous material containing acetone into which the acetylene is dissolved. ACGIH has established a TLV-TWA of 500 ppm for acetone and a STEL of 750 ppm.

WORKING WITH WELDING AND CUTTING MAY CREATE ADDITIONAL HEALTH HAZARDS. FUMES AND GASES can be dangerous to your health and may cause serious lung disease.* Keep your head out of the fumes. Do not breathe fumes and gases caused by the process. Use enough ventilation, local exhaust, or both to keep fumes and gases from your breathing zone and the general area. The type and amount of fumes and gases depend on the equipment and supplies used. Possibly dangerous materials may be found in fluxes, coatings, gases, metals etc. Obtain a Material Safety Data Sheet (MSDS) for each material used. Air samples can be used to find out what respiratory protection is needed. Short term overexposure to fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat, or eyes.

***NOTES TO PHYSICIAN:**

Acute: Gases, fumes, and dusts may cause irritation to the eyes, lungs, nose, and throat. Some toxic gases associated with welding and related processes may cause pulmonary edema, asphyxiation, and death. Acute overexposure may include signs and symptoms such as watery eyes, nose and throat irritation, headache, difficulty breathing frequent coughing, or chest pains.

Chronic: Protracted inhalation of air contaminants may lead to their accumulation in the lungs, a condition which may be seen as dense areas on chest x-rays. The severity of change is proportional to the length of exposure. The changes seen are not necessarily associated with symptoms or signs of reduced lung function or disease. In addition, the changes on x-rays may be caused by non-work related factors such as smoking, etc.

OTHER EFFECTS OF OVEREXPOSURE:

None known.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

Repeated or prolonged exposure is not known to aggravate medical condition.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:

None

CARCINOGENICITY:

Not listed as carcinogen by OSHA, NTP or IARC.

3. Composition and Information on Ingredients

COMPONENTS

CAS NUMBER

CONCENTRATION % by Mole

Acetylene

74-86-2

>99.9*

*Note: Acetylene cylinders are filled with a porous material containing acetone (CAS 67-64-1) into which the acetylene is dissolved.

4. First Aid Measures

INHALATION:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

SKIN CONTACT:

In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

SWALLOWING:

If liquid is swallowed, do not induce vomiting. Call a physician.

EYE CONTACT:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. See a physician, preferably an ophthalmologist, immediately.

NOTES TO PHYSICIAN:

Aspired acetone may cause severe lung damage. If a large quantity of material has been swallowed, stomach contents should be evacuated quickly in a manner which avoids aspiration. Otherwise, treatment should be directed at the control of symptoms and the clinical condition. No specific antidote is known.

5. Fire Fighting Measures

FLAMMABLE : Yes. **IF YES, UNDER WHAT CONDITIONS?** See "Unusual Fire and Explosion Hazards" in this section.

EXTINGUISHING MEDIA: See paragraphs below.

PRODUCTS OF COMBUSTION: These products are carbon oxides (CO, CO₂).

PROTECTION OF FIREFIGHTERS:

DANGER! Refer to CGA safety bulletin SB-4, "Handling Acetylene Cylinders in Fire Situations". Evacuate all personnel from danger area. Immediately cool containers with water spray from maximum distance taking care not to extinguish flames. Remove ignition sources if without risk. If flames are accidentally extinguished, explosive re-ignition may occur. Use self-contained breathing apparatus. Stop flow of gas if without risk while continuing cooling water spray. Remove all containers from area of fire if without risk. Allow fire to burn out.

SPECIFIC PHYSICAL AND CHEMICAL HAZARDS:

Extremely flammable gas. Forms explosive mixtures with air and oxidizing agents. Container may rupture due to heat of fire. Do not extinguish flames due to possibility of explosive re-ignition. No part of a container should be subjected to temperature higher than 52 C. Most containers are provided with a pressure relief device designed to vent contents when they are exposed to elevated temperature. Contact with copper, silver, or mercury or their alloys or halogens can cause explosion. Vapours form from this product and may travel or be moved by air currents and ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharges, or other ignition sources at locations distant from product handling point. Explosive atmospheres may linger. Before entering area, especially confined areas, check atmosphere with approved device.

SENSITIVITY TO IMPACT:

Avoid impact against container.

SENSITIVITY TO STATIC DISCHARGE:

Possible, See Section 7.

PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS:

Firefighters should wear self-contained breathing apparatus and full fire-fighting turnout gear.

FLAMMABLE LIMITS IN AIR, % by volume:

LOWER: 2.5

UPPER: 100

FLASH POINT: CLOSED CUP: -17.8°C (0°F). (Tag)

AUTOIGNITION TEMPERATURE: 305°C (581°F)

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Personal Precautions:

DANGER! **Flammable, high-pressure gas.** Forms explosive mixtures with air. Immediately evacuate all personnel from danger area. Use self-contained breathing apparatus where needed. Remove all sources of ignition if without risk. Reduce gas with fog or fine water spray. Shut off flow if without risk. Ventilate area or move cylinder to a well-ventilated area. Flammable gas may spread from leak. Before entering area, especially confined areas, check atmosphere with an appropriate device.

Environmental Precautions:

Prevent waste from contaminating the surrounding environment. Keep personnel away. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, provincial, and local regulations. If necessary, call your local supplier for assistance.

7. Handling and Storage

PRECAUTIONS TO BE TAKEN IN HANDLING:

Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop. All piped acetylene systems and associated equipment must be grounded. Electrical equipment must be non-sparking or explosion-proof. Leak check with soapy water; never use a flame. Never use copper piping for acetylene service; use only steel or wrought iron. Open acetylene cylinder valves the minimum amount required for acceptable flow; this will allow you to close valves as quickly as possible in an emergency. Do not open acetylene cylinder valves more than 1½ turns. Never use acetylene at pressures exceeding 103.5 kPa (15 psig). Acetylene cylinders are heavier than other cylinders because they are packed with a porous material and acetone. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Open valve slowly. If valve is hard to open, discontinue use and contact your supplier. For other precautions in using acetylene, see section 16.

PRECAUTIONS TO BE TAKEN IN STORAGE:

Store and use with adequate ventilation. Separate flammable cylinders from oxygen, chlorine, and other oxidizers by at least 6.1 m or use a barricade of non-combustible material. This barricade should be at least 1.53 m high and have a fire resistance rating of at least ½ hour. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Post "No Smoking or Open Flames" signs in storage and use areas. There must be no sources of ignition. All electrical equipment in storage areas must be explosion-proof. Storage areas must meet national electric codes for Class 1 hazardous areas. Store only where temperature will not exceed 52 C. Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.

OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE:

Flammable high-pressure gas. Use only in a closed system. Use piping and equipment adequately designed to withstand pressures to be encountered. Use only spark-proof tools and explosion-proof equipment. Keep away from heat, sparks, and open flame. **May form explosive mixtures with air.** Ground all equipment. **Gas can cause rapid suffocation due to oxygen deficiency.** Store and use with adequate ventilation. Close valve after each use; keep closed even when empty. **Prevent reverse flow.** Reverse flow into cylinder may cause rupture. Use a check valve or other protective device in any line or piping from the cylinder. **When returning cylinder to supplier, be sure valve is closed, then install valve outlet plug tightly. Never work on a pressurized system.** If there is a leak, close the cylinder valve. Vent the system down in a safe and environmentally sound manner in compliance with all federal, provincial, and local laws; then repair the leak. **Never place a compressed gas cylinder where it may become part of an electrical circuit.**

RECOMMENDED PUBLICATIONS:

Additional information on storage, handling, and use of this product is provided in **NFPA 55: Standard for the Storage, Use, and Handling of Compressed and Liquefied Gases in Portable Cylinders**, published by the National Fire Protection Association.

See also Praxair publication P-14-153, *Guidelines for Handling Gas Cylinders and Containers*. Obtain from your local supplier.

8. Exposure Controls/Personal Protection

INGREDIENTS	CAS NUMBER	LD ₅₀ (Species & Routes)	LC ₅₀ (Rat, 4 hrs.)	Exposure Limits
Acetylene	74-86-2	Not available.	Not available.	Simple asphyxiant.

IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH):**VENTILATION/ENGINEERING CONTROLS:**

LOCAL EXHAUST: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. Train the worker to keep his head out of the fumes.

MECHANICAL (General): Use a local exhaust system, if necessary, to maintain an adequate supply of oxygen in the worker's breathing zone.

SPECIAL: Use only in a closed system.

OTHER: Use local exhaust ventilation or handle in a ventilated enclosure.

PERSONAL PROTECTION:

RESPIRATORY PROTECTION: Use respirable fume respirator or air supplied respirator when working in confined space or where local exhaust or ventilation does not keep exposure below TLV (acetone) or the applicable TLVs for fumes, gases, and other by-products of welding with acetylene. Select in accordance with the provincial regulations or guidelines. Selection should also be based on the current CSA standards Z94.4, "Selection, care and use of respirators". Respirators should be approved by NIOSH and MSHA

SKIN PROTECTION: Welding gloves recommended.

EYE PROTECTION: Wear safety glasses when handling cylinders.

Select in accordance with the current CSA standard Z94.3, "Industrial Eye and Face Protection", and any provincial regulations, local bylaws or guidelines.

OTHER PROTECTIVE EQUIPMENT: Metatarsal shoes for cylinder handling. Protective clothing where needed. Cuffless trousers should be worn outside the shoes. Select in accordance with the current CSA standard Z195, "Protective Foot Wear", and any provincial regulations, local bylaws or guidelines.

9. Physical and Chemical Properties

PHYSICAL STATE: Gas.	FREEZING POINT: -82.2°C (-116°F) 6170 KPa abs	pH: Not applicable.
BOILING POINT: -75.2°C (-103.4°F) 6170 KPa abs	VAPOUR PRESSURE: 4476.8 kPa (@ 20°C)	MOLECULAR WEIGHT: 26.04 g/mole
SPECIFIC GRAVITY: LIQUID (Water = 1): Not applicable.	SOLUBILITY IN WATER: Not applicable.	
SPECIFIC GRAVITY: VAPOUR (air = 1): 0.906	EVAPORATION RATE (Butyl Acetate=1): Not applicable.	COEFFICIENT OF WATER/OIL DISTRIBUTION: Not applicable.
VAPOUR DENSITY: 0.00117 g/ml @ 0 C	% VOLATILES BY VOLUME: 100% (v/v).	ODOUR THRESHOLD: 657 mg/m3
APPEARANCE & ODOUR: Colourless. Odour: Acetylene of 100% purity is odourless, but commercial acetylene has a distinctive garlic-like odour.		

10. Stability and Reactivity

STABILITY:	Unstable.
CONDITIONS OF CHEMICAL INSTABILITY:	Stable as shipped. Avoid use at pressure above 15 psig.
INCOMPATIBILITY (materials to avoid):	Avoid contact with copper, silver, mercury or their alloys, oxidizing agents, acids, halogens, moisture.
HAZARDOUS DECOMPOSITION PRODUCTS:	Thermal decomposition or burning may produce carbon monoxide/carbon dioxide. The welding and cutting process may form reaction products such as carbon monoxide and carbon dioxide.
HAZARDOUS POLYMERIZATION:	Will not occur.
CONDITIONS TO AVOID:	Elevated temperatures and pressures and/or presence of a catalyst.
CONDITIONS OF REACTIVITY:	Fire or explosion may result from use at elevated temperatures & pressures or from use with incompatible materials.

11. Toxicological Information

ACUTE DOSE EFFECTS: No known effects from acetylene gas. The welding process may generate hazardous fumes and gases. (See section 8, 10, 15 and 16.)

STUDY RESULTS:

None known.

12. Ecological Information

No adverse ecological effects expected. This product does not contain any Class I or Class II ozone-depleting chemicals. The components of this mixture are not listed as marine pollutants by TDG Regulations.

13. Disposal Considerations

WASTE DISPOSAL METHOD: Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier.

14. Transport Information

TDG/IMO SHIPPING NAME: Acetylene, dissolved

HAZARD CLASS:	CLASS 2.1: Flammable gas.	IDENTIFICATION #:	UN1001	PRODUCT REPORTABLE QUANTITY (PRQ):
				Any accidental release in a quantity that could pose a danger to public safety or any sustained release of 10 minutes or more.

SHIPPING LABEL(s): Flammable gas

PLACARD (When Required): Flammable gas

SPECIAL SHIPPING INFORMATION:

Cylinders should be transported in a secure position, in a well-ventilated vehicle. Cylinders transported in an enclosed, non-ventilated compartment of a vehicle can present serious safety hazards.

15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, provincial, and local regulations. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS (Canada): CLASS A: Compressed gas.
CLASS B-1: Flammable gas.
CLASS F: Dangerously reactive material.

This product is on the DSL list.

International Regulations:

EINECS: Not available.

DSCL (EEC): This product is not classified according to the EU regulations.

International Lists: No products were found.

16. Other Information

MIXTURES:

When two or more gases, or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist, or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

HAZARD RATING SYSTEM:

HMIS RATINGS:

HEALTH 2

FLAMMABILITY 4

PHYSICAL HAZARD 2

STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:

THREADED:	CGA-510, CGA-520, CGA-200
PIN-INDEXED YOKE:	None.
ULTRA-HIGH-INTEGRITY CONNECTION:	None.

Use the proper CGA connections. **DO NOT USE ADAPTERS.** Additional limited-standard connections may apply. See CGA pamphlets V-1 and V-7 listed below.

Ask your supplier about free Praxair safety literature as referred to in this MSDS and on the label for this product. Further information about this product can be found in the following pamphlets published by the Compressed Gas Association, Inc. (CGA), 4221 Walney Road, 5th Floor, Chantilly, VA 20151-2923, Telephone (703) 788-2700, Fax (703) 961-1831, website: www.cganet.com.

AV-1	Safe Handling and Storage of Compressed Gas
G-1	Acetylene
G-1.1	Commodity Specification for Acetylene
G-1.2	Recommendation for Chemical Acetylene Metering
G-1.3	Acetylene Transmission for Chemical Synthesis
P-1	Safe Handling of Compressed Gases in Containers
P-14	Accident Prevention in Oxygen-Rich, Oxygen-Deficient Atmosphere
SB-2	Oxygen-Deficient Atmospheres
V-1	Compressed Gas Cylinder Valve Inlet and Outlet Connections
V-7	Standard Method of Determining Cylinder Valve Outlet Connections for Industrial Gas Mixtures
---	Handbook of Compressed Gases, Fifth Edition

Praxair asks users of this product to study this MSDS and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this MSDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

PREPARATION INFORMATION:

DATE: Oct 15, 2013
DEPARTMENT: Safety and Environmental Services
TELEPHONE: 905-803-1600

The opinions expressed herein are those of qualified experts within Praxair Canada Inc. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of use of the product are not within the control of Praxair Canada Inc., it is the user's obligation to determine the conditions of safe use of the product.

Praxair Canada Inc. requests the users of this product to study this Material Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

Praxair and the Flowing Airstream design are trademarks of Praxair Canada Inc.

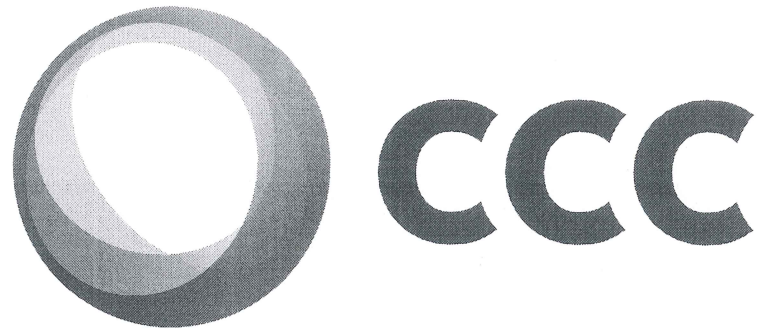
Other trademarks used herein are trademarks or registered trademarks of their respective owners.



Praxair Canada Inc.
1 City Centre Drive
Suite 1200
Mississauga, ON L5B 1M2

32-17573-6

DEC 0 2 2015



Canada Colors and Chemicals Limited

**152 Kennedy Road South
Brampton, Ontario
Canada
L6W 3G4**

General Inquiry Number: (905) 459-1232

**Material Safety Data Sheet
Attached**

This product is distributed by
Canada Colors and Chemicals Limited
General Inquiry: (905) 459-1232
24 Hour Emergency: (416) 444-2112



CCC: Product Code: 211902

CCC: Product Name: BARIUM CARBONATE 99% PWD

正本
ORIGINAL

唐山昊勗成化工产品销售有限公司®

TANGSHAN HAOXUCHENG CHEMICAL TRADING CO., LTD.

NO.118-8, XINHUA WEST ROAD, ROOM33, NO.15 BLDG TANGSHAN 063000 CHINA

Material Safety Data Sheet

Barium Carbonate

(Canadian Vision)

SECTION 1- PRODUCT AND COMPANY IDENTIFICATION

Product Identification:

Product Name:	Barium Carbonate	Trade Names:	Barium Carbonate
Chemical Name:	Barium carbonate	Product Grade:	Tech-grade
Chemical Family:	Inorganic	Catalog Codes:	TSHXC-BC
Synonym:	Barium salt; Barium monocarbonate; Carbonic acid, barium salt (1:1)		
Molecular Formula	BaCO ₃		
Molecular Weight:	197.37 g/mol		

Identified Usage: Glass and ceramic industry, Construction materials additives, Pigment industry, Electronic industry, Treatment of brines, Precipitation agents, Laboratory reagent, and Chemical intermediate.

Company Identification:

TANGSHAN HAOXUCHENG CHEMICAL TRADING CO., LTD.

Address:

No.118-8, XINHUA WEST RD, ROOM33, NO.15 BLDG TANGSHAN HEBEI Prov. P.R. CHINA 063000

24 hour Emergency Call:

++86 315 5269898 FAX: ++86 315 5267279

Contact Person:

Park Zhang; John Yu

SECTION 2- HAZARDS IDENTIFICATION

WHMIS Classification and labeling:

- Class D1B Toxic Material Causing Immediate and Serious Toxic Effects $\geq 1\%$



This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR

Emergency Overview:

Toxic! May be fatal if swallowed. Harmful if inhaled. May cause irritation to skin, eyes and respiratory tract. Affects Muscles (including the heart), and central nervous system.

General Information:

Appearance: Solid Powder **Colour:** White **Odour:** Odorless

Acute Health Effects:

Eye: May cause moderate irritation, redness and pain.

Skin: May cause slight irritation with burning pain, itching and redness.

Inhalation: May cause severe irritation of the respiratory tract with sore throat, coughing, shortness of breath. Excessive exposures may produce lung damage.

Ingestion: Harmful if swallowed. Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause muscle paralysis, respiratory failure, and possible death.

Chronic Health Effects:

Long-term inhalation of dust may lead to deposition in lungs in sufficient quantities to produce baritosis - a benign pneumoconiosis. This produces a radiological picture. Symptoms and abnormal signs may not be present.

Carcinogenicity: None

Other Toxicity Effects: Additional information See Toxicological Information (Section 11)

Environmental Effects: Additional information See Environmental Information (Section 12)

SECTION 3- COMPOSITION, INFORMATION ON INGREDIENTS

Composition:

Chemical Name	CAS#	LD50 [ORAL, RAT]	ACGIH- TLV	% By Weight	EINECS/ELINCS
Barium Carbonate BaCO ₃	513-77-9	418mg kg ⁻¹	TWA=0.5mg/m ³ as Ba	≥99%	208-167-3

SECTION 4-FIRST AID MEASURES

Eye Contact:	<p>Immediately flush eyes with plenty of water for at least 15 minutes. Lifting upper and lower eyelids occasionally.</p> <p>If eye irritation persists, get medical attention.</p>
Skin:	<p>Remove any contaminated clothing.</p> <p>Wash the skin immediately with soap and water for at least 15 minutes.</p> <p>Get medical attention if irritation develops or persists.</p> <p>Wash clothing before reuse.</p>
Inhalation:	<p>Remove the subject from dusty environment and let him blow his nose.</p> <p>Keep subject warm.</p> <p>If required, provide artificial respiration. Do NOT use mouth-to-mouth resuscitation.</p> <p>If symptoms persist, get medical attention immediately.</p>
Ingestion:	<p>Get medical attention immediately. Take victim immediately to hospital.</p> <p>Conscious:</p> <p>If swallowed, rinse mouth with water immediately (only if the person is conscious).</p> <p>Give to drink 30 grams of sodium sulfate in 250 ml of fresh water.</p> <p>Do NOT induce vomiting unless directed to do so by medical personnel.</p> <p>Artificial respiration and/or oxygen may be necessary.</p> <p>Unconscious but Breathing:</p> <p>Never give anything by mouth to an unconscious person.</p> <p>Artificial respiration and/or oxygen may be necessary.</p>
Notes to Physician:	<p>Treat symptomatically and supportively. Sodium sulfate can be given in case of ingestion to precipitate out the barium as barium sulfate.</p> <p>Monitor patients with significant ingestion for respiratory, cardiovascular, and blood pressure status. Watch for cardiac arrhythmias, respiratory failure due to flaccid paralysis of respiratory muscles, pulmonary edema, vocal cord paralysis, severe hypertension, and late effect kidney failure.</p> <p>Acute barium poisoning results in hypokalemia (low potassium levels). The administration of fluids containing dilute concentrations of potassium salts may be indicated.</p>

SECTION 5-FIRE-FIGHTING MEASURES

General Information:	Material will not burn.
Flammability Class (WHMIS):	Not Regulated
Extinguishing Media:	Use extinguishing media that are appropriate to local circumstances and the surrounding environment.
Unsuitable Extinguishing Media:	None
Special Exposure Hazards in a Fire:	Non-combustible
Hazardous Decomposition Products:	Carbon monoxide, carbon dioxide, barium oxide.
Special Protective Equipment for Firefighters:	
	Wear self-contained breathing apparatus (NIOSH-approved) with full facepiece operated in the pressure demand or other positive pressure mode.
	Fire fighters must wear fire resistant personnel protective equipment.
	Wear chemical resistant oversuit.
Additional Information:	
Sensitivity to Mechanical Impact:	Not expected to be sensitive to mechanical impact.
Sensitivity to Static Discharge:	Not expected to be sensitive to mechanical impact.
Special Remarks on Fire Hazards:	Non-combustible
Special Remarks on Explosion hazards:	Not Available

SECTION 6- ACCIDENTAL RELEASE MEASURES

Personal Precautions:	Use personal protective equipment. Sweep-up to eliminate slipping hazard Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation. Refer to protective measures listed in sections 7 and 8.
Environmental Precautions:	Shall not be released into the environment.
Methods for Cleaning Up:	Avoid dust formation. Ensure adequate ventilation. Sweep up and shovel into a convenient waste disposal container. Ventilate area and wash spill site after material pickup is complete. Large spills: Dike for later disposal. Place unusable material into a closed labeled container compatible with the product. Treat recovered material as described in the section 13 " WASTE DISPOSAL ".
Additional Information:	Poisonous solid. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

SECTION 7- HANDLING & STORAGE

Handling:	Avoid breathing dust, vapor, mist, or gas. Avoid contact with skin and eyes. Use only in well-ventilated areas. Use only equipment and materials, which are compatible with the product.
Storage:	Keep container tightly closed. Keep container in a cool, dry, well-ventilated area. Keep away from Incompatible products.
Packaging material:	Paper + PE coating.
Other information:	Avoid dust formation. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

SECTION 8- EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limit Values---

Authorized Limit Values:

Barium Carbonate

US. ACGIH Threshold Limit Values 01 2006:

TWA=On**0.5mg/m3** as Ba in soluble compounds of Ba

Canada. Ontario OELs. (Ministry of Labor - Control of Exposure to Biological or Chemical Agents) 12 2007:

TWA=On**0.5mg/m3** as Ba in soluble compounds of Ba

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) 2006:

TWA=On**0.5mg/m3** as Ba in soluble compounds of Ba

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) 10 2006

TWA=On**0.5mg/m3** as Ba in soluble compounds of Ba

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) 07 2007

TWA= **On0.5mg/m3** as Ba in soluble compounds of Ba

Time Weighted Average (TWA) for 8 hour workdays

No Specific TLV STEL (Short Term Exposure Level) has been set.

Excursions in exposure level may exceed 3 times the TLV TWA for no more than a total of **30** minutes during a workday and under no circumstances should they exceed **5 times** the TLV TWA.

Engineering Controls:

Ensure adequate ventilation.

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.

If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Apply technical measures to comply with the occupational exposure limits.

Personal Protective Equipment:

Respiratory Protection:

In case of insufficient ventilation, wear suitable respiratory equipment.

Use respirators and components tested and approved under appropriate government standards such as NIOSH/MSHA approved air purifying dust or mist respirator or European Standard EN 149.

Self-contained breathing apparatus in medium confinement/insufficient oxygen/in case of large uncontrolled emissions/in all circumstances when the mask and cartridge do not give adequate protection

Immediately Dangerous to life and health (**IDLH**) value: **50mg/m3** as Ba. That means the most protective respiratory equipments are failed to work. Evacuate the people from the contaminated environment a.s.a.p.

Hand Protection:

Chemical protective gloves. Recommended materials: PVC, neoprene or rubber.

Eyes:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin:

Wear impervious protective clothing made from cotton, canvas, plastic, and rubber.

Including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Hygiene Measures:

Safety shower should be nearby and ready for use.

Eye wash bottle with pure water should be ready for use.

Do not eat, drink or smoke in areas where this material is handled.

Wash contaminated clothing before reuse.

Handle in accordance with good industrial hygiene and safety practice.

SECTION 9-PHYSICAL&CHEMICAL PROPERTIES

Physical Appearance:	Solid Powder
Colour:	White
Odor:	Odorless
Important Health, Safety and Environmental Information:	
pH:	8.0 - 10.0 (saturated aqueous solution) @20 °C (68 °F)
Boiling Point:	1300°C (2372°F)- 1450°C (2,642°F)
Melting Point:	811 °C (1491.8°F)
Decomposition Temperature:	> 1,450 °C (2,642 °F)
Relative Density:	4.3-4.43g/cm ³ @ 20°C(68 °F)
Bulk Density:	From 400 – 2,000 kg/m ³ (25_125 lbs/ft.3)
Granulometry:	Not Available
Vapor Pressure (mm Hg):	0 @ 20C (68F) Essentially
Vapor Density (air=1):	Not Applicable
Viscosity:	Not Applicable
Evaporation Rate:	Not Applicable
Partition coefficient:	Not Applicable (inorganic; dissociation)
Solubility in Water:	Almost insoluble in water --- ca.16mg/l@ 16°C; ca.20mg/l @20°C; ca.60mg/l@100°C
Solubility:	<i>Soluble</i> in HCl, HNO ₃ , ethanol; <i>Insoluble</i> in H ₂ SO ₄ .
Flash Point:	Non-combustible
Auto flammability:	Non-combustible
Flammability:	Non-combustible
Explosive Properties:	Not Explosive
Oxidizing Properties:	Not Oxidizer

SECTION 10-STABILITY AND REACTIVITY

Stability:	Stable under recommended storage conditions.
Condition to Avoid:	None Decomposition will begin @ 1.450 °C (2.642 °F)

Materials and Substances to Avoid:

Incompatible with acids.

Hazardous Decomposition Products:

Carbon monoxide, carbon dioxide, barium oxide.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Contact with acids causes formation of Carbon dioxide gas that may cause suffocation in enclosed spaces.

Special Remarks on Corrosivity: Not Available

Polymerization: Will not occur

SECTION 11- TOXICOLOGICAL INFORMATION

RTECS number: CQ860000
Routes of Entry: Eye and Skin Contact; Inhalation; Ingestion

Acute Toxicity:

Substance:	LD50 [ORAL, RAT]	LD50 [DERMAL, RABBIT]	LC50 [INHALATION, RAT]
Barium carbonate	418mg kg ⁻¹	-----	115ppm-24hours

Acute Toxicity, Other Information:

ORL-HMN LDLO 17 mg kg⁻¹ ORL-MAN LDLO 800 mg kg⁻¹ IPR-MUS LD50 200 mg kg⁻¹ IVN-RAT LDLO 20 mg kg⁻¹

Corrosiveness and Irritation:

Skin Irritation: (Experimental)--- Irritating

Eyes Irritation: (Experimental)--- Irritating

Sensitization: No Specific Data Available

Signs and Symptoms of Exposure (Ingestion):

Excessive salivation, vomiting, severe abdominal pain, and violent purging with watery and bloody stools; a slow and often irregular pulse and a transient elevation in arterial blood pressure; tinnitus, giddiness and vertigo; muscle twitchings, progressing to convulsions and/or paralysis; dilated pupils with impaired accommodation; confusion and increasing somnolence, without coma; collapse and death from respiratory failure and cardiac arrest.

Chronic Health Effects:

Inhalation, Repeated exposure, rat, Target Organs: cardio-vascular system, hematology system, Respiratory system, NOEL: 5,2 mg/m³, observed effect

Oral, Repeated exposure, rat/mouse, Target Organs: cardio-vascular system, hematology system, renal system, adrenal glands, observed effect

Repeated Dose Toxicity:

Animal study indicates

Inhalation- rat, 1month: changes in red and white blood picture, inhibition of enzyme activity, influence on metabolism and vascular tonus as well as reduction in the detoxifying function of the liver; desquamative bronchitis, focal thickening of the interalveolar septa in the lung tissue; signs of granular dystrophy in heart, liver, and kidneys.

Inhalation-rat, 4month: considerable drop in weight gain, increased arterial pressure, decreased hemoglobin value, leucocytosis, thrombopenia, decrease blood sugar, increased blood phosphorus; increased urine calcium, decreased serum protein, inhibition of cholinesterase and alk; phosphatase activity, impaired detoxifying liver function, disturbance of cardiac conductivity; the indices did not disappear after period of recovery; pathology; mild protein dystrophy, moderate perivascular and peribronchial sclerosis with focal thickening of the interalveolar septa and collagenation in the lungs.

Intratracheal-rat 9months: Initial sclerotic changes in lung tissue; Regarded as the result of productive inflammation.

Carcinogenicity: Not classed as carcinogenic by ACGIH (A4), IARC, OSHA, NTP or EPA.

Genetic toxicity in Vitro and Vivo: No Specific Data Available

Toxicity for Reproduction:

Animal study indicates (*Inhalation, rat, 70days; 4 months*) --- caused maternal and paternal effects. Paternal: decrease of the number of sperm producing ability. Maternal: damage to the ovaries and fallopian tubes.

Increase prenatal mortality in offspring

No Teratogenic changes.

Mutagenicity Data: No Specific Data Available

Developmental Toxicity and Teratogenicity:

Animal study indicates (*Oral, Repeated exposure, rat*) --- increased mortality in offspring of post partum; leucocytosis, disturbance in hepatic synthetic function; increased hippuric aciduria in offspring.

Additional Information:

Barium carbonate is harmful after ingestion due to its transformation to very soluble BaCl₂ in the stomach and substantial absorption of the Ba ion (cause nervous, cardiovascular, respiratory and gastro-intestinal troubles).

SECTION 12- ENVIRONMENTAL INFORMATION

Ecotoxicity Effects:

Acute Toxicity:

Acute Prolonged Toxicity to Fish: Fish: *Gambusia affinis* --- 10g/l (>96 hours)

Acute Toxicity to Aquatic Invertebrates: No Specific Data Available

Toxicity to Aquatic Plants e.g. Algae: No Specific Data Available

Chronic Ecotoxicity: No Specific Data Available

Mobility: Air--- transport as solid aerosols
Water/soil --- poorly soluble in water. Barium mobility is reduced by precipitation of barium carbonate and sulfate.

Persistence and Degradability: Persistent because of precipitation in Aquatic environments and of stable form in soil, (Whiterite) Cation precipitation happens, especially in presence of sulfates or carbonates in the nature.

Biodegradation: Not Applicable

Bioaccumulative Potential: Potential accumulation of the cation.

Results of PBT Assessment: No Specific Data Available

Addition information: Can be dangerous if allowed to enter drinking water intakes. Do not contaminate domestic or irrigation water supplies.

SECTION 13- WASTE DISPOSAL

Product Disposal: Dispose of wastes in an approved waste disposal facility.
Do not dispose of wastes with normal garbage, or to sewer systems.
In accordance with all federal, state, and local environmental regulations.

Package Disposal: Containers that cannot be cleaned must be treated as waste and disposed of in an approved industrial incineration facility.

RCRA Hazardous Waste: Listed RCRA Hazardous Waste (40 CFR 302) - No
Unlisted RCRA Hazardous Waste (40 CFR 302) - Yes
D005 (barium containing waste)

Additional Information: Reevaluation of the product may be required by the user at the time of disposal since the product uses, transformations, mixtures and processes may influence waste classification.

SECTION 14- TRANSPORT INFORMATION

CANADA-TDG

Shipping Name:	Class	UN/NA	PG	Label(s)	M P	ERG
Barium Compound, N.O.S (barium Carbonate)	6.1	1564	III	Toxic	No	154

RID/ADR

Barium Compound, N.O.S (barium Carbonate)	6.1	1564	III	Toxic
---	-----	------	-----	-------

IMDG

Barium Compound, N.O.S (barium Carbonate)	6.1	1564	III	Toxic
---	-----	------	-----	-------

IATA-DGR

Barium Compound, N.O.S (barium Carbonate)	6.1	1564	III	Toxic
---	-----	------	-----	-------

U.S. DOT

Shipping Name:	Class	UN/NA	PG	Label(s)	M P	ERG	STCC
Barium Compound, N.O.S (barium Carbonate)	6.1	1564	III	Toxic	No	154	28-126-13

PG- Packing Group M P- Marine Pollutant ERG -Emergency info

SECTION 15- REGULATORY INFORMATION

CANADA:

Inventory Information:

Canadian Domestic Substances List (DSL): All of the components of this product are listed on the Canadian Domestic Substances List.
Canadian Non-Domestic Substances List (NDSL): N/A

WHMIS Classification and labeling:

- D1B Toxic Material Causing Immediate and Serious Toxic Effects



This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR

Canadian Ingredient Disclosure List

CAS# 513-77-9 is listed on the Canadian Ingredient Disclosure List.

US Federal, States Regulations:

TSCA 8(b) inventory: Barium Carbonate

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A) ----- not regulated.

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required ----- not regulated.

US. EPA CERCLA Hazardous Substances (40 CFR 302) ----- not regulated.

HMIS (Hazardous Material Information System)

Health = 2 Fire = 0 Reactivity = 1 PPE: Supplied by User; dependent on local conditions

NFPA (National Fire Protection Association)

Health = 2 Flammability = 0 Instability = 1 Special =None

European Labeling in Accordance with EC Directives:


Annex I Index#: 056-003-00-2

Classification as in directive 67/548/EEC

Class of danger: Corrosive

R-Phrases--- R22: Harmful if swallowed.

Labelling as in directive 67/548/EEC

Symbol(s) and Indication(s) of Danger:  + Xn: Harmful

R-Phrases--- R22: Harmful if swallowed.

S-Phrases--- S2: Keep out of the reach of children. S24/25: Avoid contact with skin and eyes.

Classification and Labelling According to **GHS:**


International Chemical Identification: barium carbonate

Classification:

Hazard Class and Category Code(s): Acute Tox. 4 *

Hazard Statement Code(s): H302--- Harmful if swallowed

Labelling

Pictogram, Signal Word Code(s): GHS07  Wng

Hazard statement Code(s): H302--- Harmful if swallowed

SECTION 16- ADDITIONAL INFORMATION

Reference:

IUCLID Chemical Data Sheet (Barium Carbonate) – 18.FEB, 2000

MSDS Creation Date: | JAN.08, 2006

Revision Date: | JAN.08, 2013

The information above is believed to be accurate and represents the best information currently available to us. However, we (TANGSHAN HAOXUCHENG CHEMICAL TRADING CO, LTD) make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall we be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if we (TANGSHAN HAOXUCHENG CHEMICAL TRADING CO, LTD) has been advised of the possibility of such damages.

MATERIAL SAFETY DATA SHEET OF BARIUM CARBONATE

TANGSHAN HAOXUCHENG CHEMICAL TRADING CO., LTD.

Address: No.118-8, Xinhua West RD. Room33, No 15 BLDG Tangshan Hebei Prov. P R China 063000

24 Hour Emergency Call: ++863155269898 Fax: ++863155267279

Material Safety Data Sheet**ACCUFLO™/MC TK 68**

000003001164

Version 3.0

Revision Date 2015/11/16

Print Date 2015/11/16

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : ACCUFLO™/MC TK 68

Product code : ACFLK68P20, ACFLK68DRM, ACFLK68DCT, ACFLK68, ACFLK68BLK

Manufacturer or supplier's details
 Petro-Canada Lubricants Inc.
 2310 Lakeshore Road West
 Mississauga ON L5J 1K2
 Canada

Emergency telephone number : Suncor Energy: +1 403-296-3000;
 Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : These products are premium quality slideway lubricants typically used on all types of machine tools and are designed to provide maximum accuracy in table movements.

Prepared by : Product Safety: +1 905-804-4752

SECTION 2. HAZARDS IDENTIFICATION**Emergency Overview**

Appearance	liquid
Colour	light brown
Odour	Mild petroleum oil like.

Potential Health Effects

Primary Routes of Entry : Eye contact
 Ingestion
 Inhalation
 Skin contact

Aggravated Medical Condition : None known.

Carcinogenicity:

IARC : No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH : No component of this product present at levels greater than or

Material Safety Data Sheet

ACCUFLO^{TM/MC} TK 68

000003001164



Version 3.0

Revision Date 2015/11/16

Print Date 2015/11/16

equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

No hazardous ingredients

SECTION 4. FIRST AID MEASURES

- If inhaled : Move to fresh air.
Artificial respiration and/or oxygen may be necessary.
Seek medical advice.
- In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash skin thoroughly with soap and water or use recognized skin cleanser.
Wash clothing before reuse.
Seek medical advice.
- In case of eye contact : Remove contact lenses.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Obtain medical attention.
- If swallowed : Rinse mouth with water.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Never give anything by mouth to an unconscious person.
Seek medical advice.
- Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : No information available.
- Specific hazards during : Cool closed containers exposed to fire with water spray.

Material Safety Data Sheet

ACCUFLO^{TM/MC} TK 68

000003001164



Version 3.0

Revision Date 2015/11/16

Print Date 2015/11/16

firefighting

Hazardous combustion products : Carbon oxides (CO, CO₂), nitrogen oxides (NO_x), sulphur oxides (SO_x), sulphur compounds (H₂S), smoke and irritating vapours as products of incomplete combustion.

Further information : Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Material can create slippery conditions.

Environmental precautions : If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up : Prevent further leakage or spillage if safe to do so.
Remove all sources of ignition.
Soak up with inert absorbent material.
Non-sparking tools should be used.
Ensure adequate ventilation.
Contact the proper local authorities.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling : For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid contact with skin, eyes and clothing.
Do not ingest.
Keep away from heat and sources of ignition.
Keep container closed when not in use.

Conditions for safe storage : Store in original container.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep in a dry, cool and well-ventilated place.
Keep in properly labelled containers.
To maintain product quality, do not store in heat or direct sunlight.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures : No special ventilation requirements. Good general ventilation

Material Safety Data Sheet

ACCUFLO ^{TM/MC} **TK 68**

000003001164



Version 3.0

Revision Date 2015/11/16

Print Date 2015/11/16

should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

- Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Filter type : organic vapour filter
- Hand protection
Material : neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R).
- Remarks : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Eye protection : Wear face-shield and protective suit for abnormal processing problems.
- Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
- Protective measures : Wash hands and face before breaks and immediately after handling the product.
Wash contaminated clothing before re-use.
Ensure that eyewash station and safety shower are proximal to the work-station location.
- Hygiene measures : Remove and wash contaminated clothing and gloves, including the inside, before re-use.
Wash face, hands and any exposed skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : liquid
- Colour : light brown
- Odour : Mild petroleum oil like.
- Odour Threshold : No data available
- pH : No data available
- Pour point : -33 °C (-27 °F)
- Boiling point/boiling range : No data available
- Flash point : 225 °C (437 °F)
Method: Cleveland open cup

Material Safety Data Sheet

ACCUFLO^{TM/MC} TK 68

00003001164



Version 3.0

Revision Date 2015/11/16

Print Date 2015/11/16

Fire Point	: No data available
Auto-Ignition Temperature	: No data available
Evaporation rate	: No data available
Flammability	: Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available
Density	: 0.8739 kg/l (15 °C / 59 °F)
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: 71.2 cSt (40 °C / 104 °F)
	9.94 cSt (100 °C / 212 °F)
Explosive properties	: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	: No data available
Incompatible materials	: Reactive with oxidising agents, acids, alkalis and reducing agents.
Hazardous decomposition products	: May release COx, NOx, SOx, H2S, methacrylate monomers, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	: Eye contact Ingestion Inhalation Skin contact
--	--

Material Safety Data Sheet

ACCUFLO^{TM/MC} TK 68

000003001164



Version 3.0

Revision Date 2015/11/16

Print Date 2015/11/16

Acute toxicity

Product:

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

Skin corrosion/irritation

Product:

Remarks: No data available

Serious eye damage/eye irritation

Product:

Remarks: No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Aspiration toxicity

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae : Remarks: No data available

Material Safety Data Sheet

ACCUFLO™/MC TK 68

000003001164



Version 3.0

Revision Date 2015/11/16

Print Date 2015/11/16

Toxicity to bacteria : Remarks: No data available

Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Offer surplus and non-recyclable solutions to a licensed disposal company.
Waste must be classified and labelled prior to recycling or disposal.
Send to a licensed waste management company.
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulation

IATA-DGR

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

49 CFR

Not regulated as a dangerous good

TDG

Not regulated as a dangerous good

Special precautions for user

Not applicable

Material Safety Data Sheet

ACCUFLO^{TM/MC} TK 68

000003001164



Version 3.0

Revision Date 2015/11/16

Print Date 2015/11/16

SECTION 15. REGULATORY INFORMATION

WHMIS Classification : Not Rated

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

The components of this product are reported in the following inventories:

DSL	On the inventory, or in compliance with the inventory
TSCA	All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.
IECSC	On the inventory, or in compliance with the inventory
EINECS	On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

For Copy of (M)SDS : The Canadian Controlled Products Regulations (CPR) (Under the Hazardous Products Act, part of the WHMIS legislation) only apply to WHMIS Controlled (i.e., hazardous) products. Therefore, the CPR and the 3-year update rule specified therein do not apply to WHMIS Non-Controlled products. Although this is true, customarily Petro-Canada reviews and updates Non-Controlled product MSDS if a customer requests such an update. These Non-Controlled product updates are given a lower priority than Controlled products but are handled as soon as practicable. If you would like to verify if the MSDS you have is the most current, or you require any further information, please contact:
Internet: lubricants.petro-canada.ca/msds
Western Canada, telephone: 1-800-661-1199; fax: 1-800-378-4518
Ontario & Central Canada, telephone: 1-800-268-5850; fax: 1-800-201-6285
Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 1-800-201-6285
For Product Safety Information: 1 905-804-4752

Prepared by : Product Safety: +1 905-804-4752

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

NONE.

Speedway International Inc.
40 Nicolas Avenue
Winnipeg, Manitoba R2J 0T5

MATERIAL SAFETY DATA SHEET

In case of Emergency contact: Speedway International Inc. (204)233-6263

PRODUCT NAME: **Blue Thunder Washer Fluid**

Effective date: Jan 1, 2011

1. INGREDIENTS: Methanol Cas# 67-56-1

Substances listed in the Ingredients Section are those identified as being at a concentration of 1% or greater, or 0.1% if the substance is on the list of potential carcinogens listed in OSFA Hazard Communication Standard. Where proprietary ingredient shows, the identity of this substance may be made available as provided in 29 CFR 1910.1200 (1)

2. Physical Data:

Boiling Point :	177 F
Vap Pressure :	Not Applicable
Vap Density :	Not applicable
Sol. In water :	Misc in all proportions
Sp. Gravity :	0.943 @20 C

Appearance : Clear light blue liquid

Odor : Slightly Alcoholic

3. Fire and Explosion Data:

Flash Point : 82 F

method Used : tcc (astm O-56-70)

Flammable Limits:

Upper Flame Limit : 36.5%

Lower Flame Limit : 6.0%

4. Extinguishing Media: Water, fog, foam, alcohol foam, co2, dry chemical

5. Fire Fighting Equipment : Positive pressure self contained breathing apparatus in any enclosed space

6. Reactivity Data:

Stable and will not polymerize

7. Environmental and Disposal Information :

Action to take for spills/leaks : Sweep up and discard.

Disposal Method : Handle in accordance with all Federal State and local Regulations.

8. Health Hazard Data:

Eye: If this product comes in contact with the eyes, flush with large amounts of water for at least 15 minutes and seek medical attention.

Skin Contact : If this product comes in contact with the skin, wash with large amounts of water. Seek medical attention if irritation persists.

Ingestion : If this product is ingested, induce vomiting if the victim is conscious. Seek immediate medical advice and/or attention.

Inhalation : If breathing difficulties, dizziness, or lightheadedness occurs when working in areas with high vapor concentrations, victim should seek air free of vapors. If victim experiences continued breathing difficulties, administer oxygen until medical assistance can be rendered. If breathing stops, begin artificial respiration and seek immediate medical attention.

9. Handling Precautions :

Exposure guidelines : none established

Ventilation : Good general ventilation.

Respiratory : No protection should be needed.

Skin protection : The use of impermeable gloves is recommended on sensitive individuals.

Eye Protection : Safety glasses are recommended to safe guard against potential eye contact.

WHMIS (Classification)

Class B-2: Flammable liquid with a flash point lower than 37.8 C (100 F)

Class D-1B: Material causing immediate and serious toxic effects (Toxic)

Class D-2A: Material causing other toxic effects (very toxic)

Class D-2B: Material causing other toxic effects (very toxic)



Material Safety Data Sheet - MSDS

Section 1. Chemical Product and Company Identification

SS Wire

Product name	Classification	Classification
Blueshield	CSA:	AWS:
640-308L;	ER308L;	ER308L;
640-308HISil;	ER308LSi;	ER308LSi;
640-309L;	ER309L;	ER309L;
640-309LHISil;	ER309LSi;	ER309LSi;
640-316L;	ER316L;	ER316L;
640-316LHISil;	ER316LSi;	ER316LSi;
Description	: GMAW Stainless Consumables	Generic Code : AL-T-013-0
In case of emergency	: 1-514-878-1667	Date of issue : 01/13/2014
Supplier	: Air Liquide Canada Inc., 1250, René-Lévesque Ouest, Suite 1700, Montréal, QC H3B 5E6	

Section 2. Hazards Identification

Physical state and Appearance : Solid.

Emergency overview : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.

WARNING!

ELECTRIC SHOCK can kill.

FUMES AND GASES can be dangerous to your health.

ARC RAYS can injure eyes and burn skin.

MAY BE HARMFUL IF INHALED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER.

Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Use only with adequate ventilation. Do not eat, drink or smoke when using this product. Avoid contact with eyes, skin and clothing. Keep container tightly closed. Use personal protective equipment as required. Wash thoroughly after handling.

Routes of entry : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

- Eyes** : Very hazardous by the following route of exposure: of eye contact (irritant). Inflammation of the eye is characterized by redness, watering and itching.
- Skin** : Hazardous by the following route of exposure: of skin contact (corrosive, irritant, sensitizer). Skin contact may produce burns. Skin inflammation is characterized by itching, scaling, reddening or, occasionally, blistering.
- Inhalation** : Hazardous by the following route of exposure: of inhalation (lung irritant).
- Ingestion** : Since the product (welding fumes) is a gas and that it is mostly probable that it will be inhaled more than ingested, please consider first to look at the preventive measures in case of inhalation.

Potential chronic health effects :

Carcinogenicity

Product/ingredient name	ACGIH	OSHA	IARC	NTP	EU
nickel	A5	-	2B	Reasonably anticipated to be a human carcinogen.	Carc. 2, H351
Crystalline silica respirable	A2	-	1	Known to be a human carcinogen.	Carc. 1A, H350

Mutagenic effects Not available.

Teratogenic effects: Not available.

Medical conditions aggravated by over-exposure : Pre-existing skin disorders and disorders involving any other target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

(* See Abbreviations (section 16).

Section 3. Composition, Information on Ingredients

Name	CAS #	% by weight	UN number
Iron	7439-89-6	45 - 80	Not available.
Chromium	7440-47-3	11 - 32	Not available.
Nickel	7440-02-0	4 - 37	Not available.
Molybdenum	7439-98-7	0.01 - 4	Not regulated.
Manganese	7439-96-5	0.5 - 2.5	Not available.
Crystalline silica respirable	14808-60-7	0.1 - 1	Not available.

The fumes emitted by the electrodes, in use, are hazardous. This MSDS is written for workers using these electrodes.

See Section 8 for Exposure Limits of the oxides found in the welding fumes.

Section 4. First Aid Measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Section 5. Fire Fighting Measures

- Flammability of the product** : Non-flammable. Emits toxic fumes when heated.
- Explosibility** : Non-explosive in the presence of the following materials or conditions: open flames, sparks and static discharge, heat and shocks and mechanical impacts.
- Fire-fighting media and instructions** : Use an extinguishing agent suitable for the surrounding fire.

Section 6. Accidental Release Measures

- Small/Large Spill and Leak** : Use appropriate tools to transfer the spilled solid to a convenient waste disposal container.

Section 7. Handling and Storage

- Handling** : Avoid contact with eyes. Avoid breathing dust. Avoid prolonged or repeated contact with skin. Do not get on skin or clothing. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.
- Storage** : All filler metals in their original, unopened containers should be kept in a relatively dry storage area at temperatures between 15°C (60°F) and 30°C (80°F) and 50% maximum relative humidity.

Section 8. Exposure Controls, Personal Protection

- Engineering controls** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

- Eyes** : Safety glasses with side shields. Face shield with radiation shielding.
- Body** : Full suit. Fire resistant.
- Respiratory** : Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear a canister breathing apparatus (respirator) or a supplied-air respirator, when required, to weld in a confined space or when room exhaust or ventilation does not keep exposure below the acceptable values.
- Hands** : Gloves. Fire resistant.
- Feet** : Metal cap, safety boots.

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			Notations
Ingredient	List name	ppm	mg/m ³	Other	ppm	mg/m ³	Other	ppm	mg/m ³	Other	
Chromium, measured as Cr	US ACGIH 6/2013	-	0.5	-	-	-	-	-	-	-	[a]
	AB 4/2009	-	0.5	-	-	-	-	-	-	-	[3]
	BC 7/2013	-	0.5	-	-	-	-	-	-	-	
	ON 1/2013	-	0.5	-	-	-	-	-	-	-	[a]
Chromium, as Cr	QC 12/2012	-	0.5	-	-	-	-	-	-	-	
	US ACGIH 6/2013	-	1.5	-	-	-	-	-	-	-	[b]
Nickel	AB 4/2009	-	1.5	-	-	-	-	-	-	-	
	BC 7/2013	-	0.05	-	-	-	-	-	-	-	
Nickel, as Ni	ON 1/2013	-	1	-	-	-	-	-	-	-	[c]
	QC 12/2012	-	1	-	-	-	-	-	-	-	
Molybdenum, as Mo	US ACGIH 6/2013	-	10	-	-	-	-	-	-	-	[b]
	US ACGIH 6/2013	-	3	-	-	-	-	-	-	-	[d]
	AB 4/2009	-	3	-	-	-	-	-	-	-	[e]
		-	10	-	-	-	-	-	-	-	
Molybdenum	BC 7/2013	-	10	-	-	-	-	-	-	-	[f]
	BC 7/2013	-	3	-	-	-	-	-	-	-	[e]
Molybdenum, as Mo	ON 1/2013	-	10	-	-	-	-	-	-	-	[b]
	ON 1/2013	-	3	-	-	-	-	-	-	-	[d]
Manganese, as Mn	US ACGIH 6/2013	-	0.1	-	-	-	-	-	-	-	[b]
	US ACGIH 6/2013	-	0.2	-	-	-	-	-	-	-	[d]
	AB 4/2009	-	0.2	-	-	-	-	-	-	-	
	BC 7/2013	-	0.2	-	-	-	-	-	-	-	
	ON 1/2013	-	0.2	-	-	-	-	-	-	-	
	QC 12/2012	-	1	-	-	3	-	-	-	-	[g]
Crystalline silica respirable	US ACGIH 6/2013	-	0.025	-	-	-	-	-	-	-	[d]
	AB 4/2009	-	0.025	-	-	-	-	-	-	-	[h]
	BC 7/2013	-	0.025	-	-	-	-	-	-	-	[e]
	ON 1/2013	-	0.1	-	-	-	-	-	-	-	[i]
		-	0.1	-	-	-	-	-	-	-	

Iron	QC 12/2012 US ACGIH	-	0.1 10	-	-	-	-	-	-	-	-	iii [k]
------	------------------------	---	-----------	---	---	---	---	---	---	---	---	------------

[3]Skin sensitization

Form: [a]Inorganic [b]Inhalable fraction [c]Inhalable fraction: means that size fraction of the airborne particulate deposited anywhere in the respiratory tract and collected during air sampling with a particle size-selective device that, (a) meets the ACGIH particle size-selective sampling criteria for airborne particulate matter; and (b) has the cut point of 100 µm at 50 per cent collection efficiency. [d]Respirable fraction [e]Respirable [f]Inhalable [g]fume [h]Respirable particulate [i]Respirable fraction: means that size fraction of the airborne particulate deposited in the gas-exchange region of the respiratory tract and collected during air sampling with a particle size-selective device that, (a) meets the ACGIH particle size-selective sampling criteria for airborne particulate matter; and (b) has the cut point of 4 µm at 50 per cent collection efficiency. [j]Respirable dust. [k]Inhalable particle.

Section 9. Physical and Chemical Properties

Physical state and Appearance : Solid.
 Color : Gray.
 Odor : Odorless.
 Melting/freezing point : 1500°C (2732°F)
 Specific gravity : Weighted average: 6.72 [Water = 1]
 Solubility : Insoluble in the following materials: cold water and hot water.

Section 10. Stability and Reactivity

Stability and reactivity : The product is stable.
 Hazardous decomposition products : Metallic oxides. carbon oxides (CO, CO₂) Arc radiation can support the production of ozone and nitrogen oxides.
 Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological Information

Product/ingredient name	Result	Species	Dose	Exposure
Manganese	LD50 Oral	Rat	9 g/kg	-

Chronic effects and other toxic effects on humans : **CARCINOGENIC EFFECTS:** Classified A4 (Not classifiable for humans or animals.) by ACGIH, 3 (Not classifiable for humans.) by IARC [Chromium]. Classified + (Proven.) by NIOSH [Nickel]. Classified 2B (Possible for humans.) by IARC, 3 (Possible for humans.) by European Union [Nickel]. Classified 2 (Reasonably anticipated to be human carcinogens.) by NTP [Nickel]. Classified A5 (Not suspected for humans.) by ACGIH [Nickel]. Classified A4 (Not classifiable for humans or animals.) by ACGIH [Manganese]. Classified 1 (Proven for humans.) by IARC, 1 (Known to be human carcinogens.) by NTP, + (Proven.) by NIOSH, 1 (Proven for humans.) by European Union [Crystalline silica respirable]. Classified A2 (Suspected for humans.) by ACGIH [Crystalline silica respirable].
 Contains material which may cause damage to the following organs: blood, kidneys, lungs, the nervous system, liver, upper respiratory tract, skin, eyes, central nervous system (CNS), nose/sinuses.

Very hazardous by the following route of exposure: of eye contact (irritant).
 Hazardous by the following route of exposure: of skin contact (corrosive, irritant, sensitizer), of inhalation (lung irritant).

Section 12. Ecological Information

Ecotoxicity data

Product/ingredient name	Result	Species	Exposure
Iron	Acute EC50 3700 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 33000 to 100000 µg/l Marine water	Crustaceans - Crangon crangon	48 hours
	Acute LC50 6.48 µg/l Marine water	Fish - Periphthalmus waltoni - Adult	96 hours
Chromium	Chronic NOEC 100 mg/l Marine water	Algae - Glenodinium halli	72 hours
	Acute EC50 0.2 ppm Marine water	Algae - Bacillariophyta	72 hours
	Acute EC50 5 ppm Marine water	Algae - Macrocyctis pyrifera - Young	4 days
	Acute EC50 35000 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 45 µg/l Fresh water	Crustaceans - Ceriodaphnia reticulata	48 hours
	Acute LC50 22 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
Nickel	Acute LC50 13.9 ppm Fresh water	Fish - Anguilla rostrata	96 hours
	Chronic NOEC 50 mg/l Marine water	Algae - Glenodinium halli	72 hours
	Chronic NOEC 0.19 µg/l Fresh water	Fish - Cyprinus carpio	4 weeks
	Acute EC50 2 ppm Marine water	Algae - Macrocyctis pyrifera - Young	4 days
	Acute EC50 450 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute EC50 1000 µg/l Marine water	Daphnia - Daphnia magna	48 hours
	Acute LC50 0.31 mg/l Marine water	Crustaceans - Americamysis bahia - Juvenile (Fledgling, Hatchling, Weanling)	48 hours
Molybdenum	Acute LC50 47.5 ng/L Fresh water	Fish - Heteropneustes fossilis	96 hours
	Chronic NOEC 100 mg/l Marine water	Algae - Glenodinium halli	72 hours
	Chronic NOEC 3.5 µg/l Fresh water	Fish - Cyprinus carpio	4 weeks
	Acute LC50 200000 µg/l	Daphnia - Daphnia magna	48 hours
Manganese	Acute LC50 800 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 500 mg/l Marine water	Algae - Glenodinium halli	72 hours
	Acute EC50 31000 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 29000 µg/l	Daphnia - Daphnia magna	48 hours
	Acute LC50 28 mg/l Fresh water	Fish - Pimephales promelas	96 hours

Products of degradation : Not applicable.

Section 13. Disposal Considerations

Waste information : Waste must be disposed of in accordance with federal, state and local environmental control regulations. Recycle, if possible.
Consult your local or regional authorities.

Section 14. Transport Information

No transport class is found applicable to this product.

Section 15. Regulatory Information

HCS Classification : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Irritating material
Sensitizing material
Carcinogen
Target organ effects

U.S. Federal regulations : TSCA 8(a) CDR Exempt/Partial exemption: Not determined
United States inventory (TSCA 8b): All components are listed or exempted.
SARA 302/304: No products were found.
SARA 311/312 Hazards identification: Immediate (acute) health hazard, Delayed (chronic) health hazard
Clean Water Act (CWA) 307: Chromium; Nickel

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Chromium	7440-47-3	11 - 32
	Nickel	7440-02-0	4 - 37
	Manganese	7439-96-5	0.5 - 2.5
Supplier notification	Chromium	7440-47-3	11 - 32
	Nickel	7440-02-0	4 - 37
	Manganese	7439-96-5	0.5 - 2.5

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations : Massachusetts : The following components are listed: CHROMIUM; NICKEL; MOLYBDENUM; MANGANESE
New York : The following components are listed: Chromium; Nickel
New Jersey : The following components are listed: CHROMIUM; NICKEL; MOLYBDENUM; MANGANESE; SILICA, QUARTZ; QUARTZ (SiO2)
Pennsylvania : The following components are listed: CHROMIUM; NICKEL; MOLYBDENUM; MANGANESE; QUARTZ (SiO2)
WARNING: This product contains a chemical known to the State of California to cause cancer.

WHMIS (Canada) : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).
CEPA Toxic substances: None of the components are listed.
Canadian ARET: None of the components are listed.
Canadian NPRI: The following components are listed: Chromium (and its compounds); Nickel (and its compounds); Manganese (and its compounds)
Alberta Designated Substances: None of the components are listed.
Ontario Designated Substances: None of the components are listed.
Quebec Designated Substances: None of the components are listed.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Section 16. Other Information

Label requirements : See Section 2.

Hazardous Material Information System (U.S.A.) : Health: 2* Fire: 0 Reactivity: 0

National Fire Protection Association (U.S.A.) : Health: 2 Fire: 0 Reactivity: 0 Other: None

References : - 29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. - CRC Handbook of chemistry and physics, 67th edition. CRC Press inc., Boca Raton, Florida. - Manufacturer's Material Safety Data Sheet. ANSI Z400.1, MSDS Standard, 2004. ANSI Z49.1 Safety in Welding and Cutting, The American Welding Society, P.O. Box 351040, Miami, FL 33135. Canadian Standard Association, CSA W117.2, Code for Safety in Welding and Cutting, 2003.

Abbreviations and acronyms : ACGIH: American Conference of Governmental Industrial Hygiene.
ACGIH-A1-Confirmed Human Carcinogen.
ACGIH-A2-Suspected Human Carcinogen.
ACGIH-A3-Animal Carcinogen.
ACGIH-A4-Not Classifiable as a Human Carcinogen.
ACGIH-A5-Not suspected as a Human Carcinogen.
IARC: International Agency for Research on Cancer.
IARC 1: Proven.
IARC 2A: Probable for human.
IARC 2B: Possible for human.
IARC 3: Not classifiable for human.
NIOSH: National Institute of Occupational Safety and Health.
NIOSH +: Proven.
NIOSH: None.
EU: European Union
Carc. 1A : May cause cancer (Known)
Carc. 1B : May cause cancer (Presumed)
Carc. 2 : Suspected of causing cancer
NTP: National Toxicology program.
NTP 1: Known to be human carcinogens.
NTP 2: Reasonably Anticipated to be human carcinogens.

Responsible name : IHS
Date of previous issue : 01/15/2011
Version : 5

Notice to reader

THE INFORMATION, RECOMMENDATIONS AND DATA CONTAINED IN THIS DOCUMENT ARE INTENDED TO BE USED BY PROPERLY TRAINED AND QUALIFIED PERSONNEL ONLY AND AT THEIR SOLE RISKS AND DISCRETION. THE INFORMATION, RECOMMENDATIONS AND DATA HEREIN CONTAINED ARE DERIVED FROM SOURCES WHICH WE BELIEVE TO BE RELIABLE. HOWEVER, AIR LIQUIDE CANADA INC. MAKES NO REPRESENTATION AND GIVES NO WARRANTY OF ANY KIND WHATSOEVER WITH RESPECT TO THEIR ACCURACY OR COMPLETENESS AND ASSUMES NO LIABILITY FOR DAMAGES OR LOSS ARISING DIRECTLY OR INDIRECTLY FROM THEIR USE, WHETHER PROPER OR IMPROPER.

SECTION I - PRODUCT IDENTIFICATION AND USE		
PRODUCT NAME: TCI 1211 H.D. PRODUCT USE: MULTI-METALHOTAQUEOUS ALKALI SOAK TANK COMPOUND (POWDER)		
EMERGENCYPHONE #: (519) 454-4370 MANUFACTURER'S NAME AND ADDRESS: TETRA-CHEM INDUSTRIES LTD. 71 JOHN ST. E., BRIGHTON CANOJ 1B0 PHONE # (519) 454-4370 - FAX # (519) 454-4362 SUPPLIER'S NAME: SAME		
SECTION II - HAZARDOUS INGREDIENTS		
HAZARDOUS INGREDIENTS	CAS NUMBER	% BYWEIGHT
a) SODIUM CARBONATE	497-19-8	10-30
b) SODIUM METASILICATE	6834-92-0	10-30
(SPECIES - ROUTE) LD ₅₀		LC ₅₀
a) (RAT-oral): 2.8 g/kg		N.A.V.
b) (RAT-oral): 0.6 g/kg		N.A.V.
SECTION III - PHYSICAL DATA		
PHYSICAL STATE:	SOLID <input checked="" type="checkbox"/>	LIQUID <input type="checkbox"/> GAS <input type="checkbox"/>
ODOR AND APPEARANCE: DETERGENT ODOR, OFF-WHITE POWDER DENSITY(g/ml): N.A.V. BOILING POINT: N.A.V. FREEZING POINT: N.A.P. pH: BASIC % VOLATILE: N.A.V. SPECIFIC GRAVITY(WATER=1): 2.53 @ 20 °C ODOR THRESHOLD: N.A.V. VAPOR PRESSURE: N.A.V. VAPOR DENSITY(AIR=1): N.A.V. OIL/ WATER DISTRIBUTION COEFFICIENT: N.A.V. SOLUBILITY IN WATER: COMPLETE IN WATER EVAPORATION RATE (n-BUTYLACETATE=1): N.A.V.		
SECTION IV - FIRE AND EXPLOSION HAZARD		
FLAMMABILITY:	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
UNDER WHAT CONDITIONS: TDG FLAMMABILITY CLASSIFICATION: N.A.P. AUTO-IGNITION TEMPERATURE: N.A.P. FLASH POINT: N.A.P. METHOD USED: FLAMMABLE LIMITS: LEL(% BY VOLUME): UEL(% BY VOLUME): MEANS OF EXTINCTION: WATER <input type="checkbox"/> CO ₂ <input type="checkbox"/> DRY CHEMICAL <input type="checkbox"/> OTHER <input type="checkbox"/> UNUSUAL FIRE AND EXPLOSION HAZARDS / REMARKS: USE AN APPROPRIATE MEAN OF EXTINCTION FOR SURROUNDING FIRE EXPLOSION DATA- SENSITIVITY TO MECHANICAL IMPACT: NONE SENSITIVITY TO STATIC DISCHARGE: NONE		
SECTION V - REACTIVITY DATA		
STABILITY: UNSTABLE <input type="checkbox"/>	STABLE <input checked="" type="checkbox"/>	
INCOMPATIBILITY TO OTHER SUBSTANCES: METALS, ACIDS		
CONDITIONS OF REACTIVITY: CONTACT, MIXING		
HAZARDOUS DECOMPOSITION PRODUCTS:		

SECTION VI - TOXICOLOGICAL PROPERTIES		
WHMIS: MATERIALS CAUSING OTHER TOXIC EFFECTS (D2) POTENTIAL HEALTH HAZARDS: ROUTES OF ENTRY: SKIN (ABSORPTION): NO (CONTACT): YES INGESTION: YES INHALATION (ACUTE): YES (CHRONIC): YES EYE: YES		
INGREDIENT	ACGIH TLV	OSHA PEL
a.	10 mg/m ³ (TWA)	15 mg/m ³
b.	N.A.V.	N.A.V.
EFFECTS OF ACUTE EXPOSURE TO PRODUCT: EYE CONTACT: CORROSIVE SKIN CONTACT: IRRITATING INHALATION OF DUST: ACUTE: IRRITATING, CHRONIC: N.A.V. INGESTION: IRRITATING TO GASTROINTESTINAL LINING AND WALL. CARCINOGENICITY, REPRODUCTIVE EFFECTS, TERATOGENICITY, MUTAGENICITY: NO REPORTED EFFECTS ON HUMANS UNDER NORMAL CONDITIONS OF USE. TARGET ORGANS: N.A.V. MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: N.A.V. EFFECTS OF CHRONIC EXPOSURE TO PRODUCT: PROLONGED OR REPEATED CONTACT WITH SKIN CAN CAUSE DEFATTING AND DRYING OF THE SKIN RESULTING IN SKIN IRRITATION, RASH, BURNS AND DERMATITIS. SENSITIZATION TO PRODUCT: N.A.V. SYNERGISTIC PRODUCTS: N.A.V.		
SECTION VII - PREVENTIVE MEASURES		
RESPIRATORY PROTECTION AND TYPE: NOT REQUIRED UNDER NORMAL NON-DUSTING CONDITIONS. NIOSH APPROVED RESPIRATOR FOR DUST PARTICLES. ENGINEERING CONTROLS: NORMAL VENTILATION UNDER NORMAL CONDITIONS. PROTECTIVE GLOVES: NEOPRENE. EYE PROTECTION: FACE SHIELD FOOT WEAR: SAFETY SHOES OTHER SPECIFIC CLOTHING OR EQUIPMENT REQUIRED: EYE BATH STATION LEAK AND SPILL PROCEDURE: FLUSH WITH WATER INTO SANITARY SEWER. FOR LARGE SPILLS, SCOOP INTO DOT APPROVED CONTAINERS. WASTE DISPOSAL: THE CLEANING PROCESS MAY GENERATE A HAZARDOUS INDUSTRIAL WASTE. COMPLY WITH CANADIAN MINISTRY OF THE ENVIRONMENT & ENERGY REGULATION 347 AND LOCAL MUNICIPAL BY-LAWS. COMPLY WITH USA EPA'S FEDERAL, STATE & LOCAL REGULATIONS. TETRA-CHEM INDUSTRIES LTD. IS LICENSED BY THE MOEE FOR WASTE MANAGEMENT ONTARIO CERTIFICATE OF APPROVAL # A800506. HANDLING PROCEDURES AND EQUIPMENT: HYGROSCOPIC, USE PLASTIC STORAGE REQUIREMENTS: DRY IN DOOR STORAGE SPECIAL SHIPPING INFORMATION: TRANSPORTATION OF DANGEROUS GOODS (EXEMPT)		
SECTION VIII - FIRST AID MEASURES		
EYE CONTACT: FLUSH EYES WITH WATER FOR 20 MINUTES TURN BACK EYE LIDS. IF IRRITATION PERSISTS, GET MEDICAL ATTENTION.		
INHALATION: MOVE PATIENT TO FRESH AIR. IF BREATHING HAS STOPPED, OR IS LABORED, GIVE OXYGEN OR ARTIFICIAL RESPIRATION. GET MEDICAL ATTENTION.		
SKIN CONTACT: REMOVE CONTAMINATED CLOTHING. FLUSH AREA WITH FRESH WATER FOR 15 MINUTES. IF IRRITATION PERSISTS, GET MEDICAL ATTENTION.		
INGESTION: DO NOT INDUCE VOMITING. ONLY IF CONSCIOUS, RINSE MOUTH WITH WATER. GIVE LARGE AMOUNTS OF MILK OR WATER. CAUTION SHOULD BE GIVEN TO ASPIRATION OF FLUID INTO LUNGS PRODUCING CHEMICAL PNEUMONITIS. KEEP PATIENT CALM. CALL PHYSICIAN IMMEDIATELY.		
SECTION IX - PREPARATION DATA		
PREPARED BY: HEALTH AND SAFETY COMMITTEE		DATE: 06 JAN 2011
CONTACT: ALSTRUTHMANN (Hon. BSc.)		TEL: (519) 454-4370
CANADA & USA TOLL FREE 1-888-658-5515		FAX: (519) 454-4362

NOTE: N. AP. = NOT APPLICABLE N. AV. = NOT AVAILABLE

ADDITIONAL INFORMATION: THE INFORMATION IN THIS MSDS HAS BEEN OBTAINED FROM SOURCES BELIEVED TO BE RELIABLE. THE MANUFACTURER AND SUPPLIER PROVIDES NO WARRANTIES EXPRESS OR IMPLIED AND ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR THE COMPLETENESS OF THE DATA CONTAINED HEREIN. SEE DISCLAIMER ON PRODUCT LABEL.

M. S. D. S.

MATERIAL SAFETY DATA SHEET

SECTION I - PRODUCT IDENTIFICATION AND USE

PRODUCT NAME: TCI 1202 H.D.
PRODUCT USE: HOTCAUSTIC FERROUS METAL
 SPRAYCLEANER (POWDER)

EMERGENCYPHONE #: (519) 454-4370

MANUFACTURER'S NAME AND ADDRESS:

TETRA-CHEM INDUSTRIES LTD.

71 JOHN ST. E., BRIGHTON CANOJ 1B0

PHONE # (519) 454-4370 - FAX # (519) 454-4362

SUPPLIER'S NAME: SAME

SECTION II - HAZARDOUS INGREDIENTS

HAZARDOUS INGREDIENTS	CAS NUMBER	% BYWEIGHT
a) SODIUM HYDROXIDE	1310-73-2	60-100
b) SODIUM CARBONATE	497-19-8	1-5
c) SODIUM METASILICATE	6834-92-0	1-5

(SPECIES - ROUTE)	LD ₅₀	LC ₅₀
a)	N.A.V.	N.A.V.
b)	(RAT-oral): 2.8 g/kg	N.A.V.
c)	(RAT-oral): 0.6 g/kg	N.A.V.

SECTION III - PHYSICAL DATA

PHYSICAL STATE: SOLID LIQUID GAS

ODOR AND APPEARANCE: DETERGENT ODOR, OFF-WHITE POWDER

DENSITY(g/ml): 2.13

BOILING POINT: 1390 °C

FREEZING POINT: N.A.P.

pH: STRONG BASE (>13 @ 1% aqueous solution)

% VOLATILE: N.A.V.

SPECIFIC GRAVITY(WATER=1): 2.13 @ 20 °C

ODOR THRESHOLD: N.A.V.

VAPOR PRESSURE: N.A.V.

VAPOR DENSITY(AIR=1): N.A.V.

OIL/WATER DISTRIBUTION COEFFICIENT: N.A.V.

SOLUBILITY IN WATER: COMPLETE IN WATER

EVAPORATION RATE (n-BUTYLACETATE=1): N.A.V.

SECTION IV - FIRE AND EXPLOSION HAZARD

FLAMMABILITY: YES NO

UNDER WHAT CONDITIONS:

TDG FLAMMABILITY CLASSIFICATION: N.A.P.

AUTO-IGNITION TEMPERATURE: N.A.P.

FLASH POINT: N.A.P. METHOD USED:

FLAMMABLE LIMITS: LEL(% BY VOLUME):

UEL(% BY VOLUME):

MEANS OF EXTINCTION:

WATER CO₂ DRY CHEMICAL OTHER

UNUSUAL FIRE AND EXPLOSION HAZARDS / REMARKS:

USE AN APPROPRIATE MEAN OF EXTINCTION FOR SURROUNDING FIRE

EXPLOSION DATA- SENSITIVITY TO MECHANICAL IMPACT: NONE

SENSITIVITY TO STATIC DISCHARGE: NONE

SECTION V - REACTIVITY DATA

STABILITY: UNSTABLE STABLE

INCOMPATIBILITY TO OTHER SUBSTANCES: METALS, ACIDS AND HOT WATER

CONDITIONS OF REACTIVITY: CONTACT, MIXING

HAZARDOUS DECOMPOSITION PRODUCTS:

SECTION VI - TOXICOLOGICAL PROPERTIES

WHMIS: CORROSIVE MATERIAL(E)
 CAUSES OTHER TOXIC EFFECTS (D2)

POTENTIAL HEALTH HAZARDS

ROUTES OF ENTRY:

SKIN (ABSORPTION): NO (CONTACT): YES INGESTION: YES
 INHALATION (ACUTE): YES (CHRONIC): YES EYE: YES

INGREDIENT	ACGIH TLV	OSHA PEL
a.	2 mg/m ³ (TWA)	
b.	10 mg/m ³ (TWA)	15 mg/m ³
c.	N.A.V.	N.A.V.

EFFECTS OF ACUTE EXPOSURE TO PRODUCT:

EYE CONTACT: CORROSIVE SKIN CONTACT: CORROSIVE

INHALATION OF DUST: ACUTE: IRRITATING, CHRONIC: ULCERATION

INGESTION: CORROSIVE TO GASTROINTESTINAL LINING AND WALL.
 CARCINOGENICITY, REPRODUCTIVE EFFECTS, TERATOGENICITY, MUTAGENICITY:

NO REPORTED EFFECTS ON HUMANS UNDER NORMAL CONDITIONS OF USE.

TARGET ORGANS: N.A.V.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: N.A.V.

EFFECTS OF CHRONIC EXPOSURE TO PRODUCT: PROLONGED OR

REPEATED CONTACT WITH SKIN CAN CAUSE DEFATTING AND DRYING

OF THE SKIN RESULTING IN SKIN IRRITATION, RASH, BURNS AND

DERMATITIS.

SENSITIZATION TO PRODUCT: N.A.V.

SYNERGISTIC PRODUCTS: N.A.V.

SECTION VII - PREVENTIVE MEASURES

RESPIRATORY PROTECTION AND TYPE: NOT REQUIRED UNDER NORMAL NON-DUSTING
 CONDITIONS. NIOSH APPROVED RESPIRATOR FOR DUST PARTICLES.

ENGINEERING CONTROLS: NORMAL VENTILATION UNDER NORMAL CONDITIONS.

PROTECTIVE GLOVES: NEOPRENE.

EYE PROTECTION: FACE SHIELD FOOT WEAR: SAFETY SHOES

OTHER SPECIFIC CLOTHING OR EQUIPMENT REQUIRED: EYE BATH STATION

LEAK AND SPILL PROCEDURE: FLUSH WITH WATER INTO SANITARY SEWER. FOR LARGE

SPILLS, SCOOP INTO DOT APPROVED CONTAINERS.

WASTE DISPOSAL:

THE CLEANING PROCESS MAY GENERATE A HAZARDOUS INDUSTRIAL WASTE. COMPLY
 WITH CANADIAN MINISTRY OF THE ENVIRONMENT & ENERGY REGULATION 347 AND
 LOCAL MUNICIPAL BY-LAWS.

COMPLY WITH USA EPA'S FEDERAL, STATE & LOCAL REGULATIONS.

TETRA-CHEM INDUSTRIES LTD. IS LICENSED BY THE MOE FOR WASTE MANAGEMENT

ONTARIO CERTIFICATE OF APPROVAL # A800506.

HANDLING PROCEDURES AND EQUIPMENT: HYGROSCOPIC, USE PLASTIC

STORAGE REQUIREMENTS: DRY INDOOR STORAGE

SPECIAL SHIPPING INFORMATION: CORROSIVE SOLIDS, N.O.S.*

(Sodium hydroxide)

CLASS 8(9.2), UN 1759, PG II

SECTION VIII - FIRST AID MEASURES

EYE CONTACT: FLUSH EYES WITH WATER FOR 20 MINUTES TURN BACK EYE LIDS.
 IF IRRITATION PERSISTS, GET MEDICAL ATTENTION.

INHALATION: MOVE PATIENT TO FRESH AIR. IF BREATHING HAS STOPPED,
 OR IS LABORED, GIVE OXYGEN OR ARTIFICIAL RESPIRATION.
 GET MEDICAL ATTENTION.

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING. FLUSH AREA WITH
 FRESH WATER FOR 15 MINUTES.
 IF IRRITATION PERSISTS, GET MEDICAL ATTENTION.

INGESTION: DO NOT INDUCE VOMITING. ONLY IF CONSCIOUS, RINSE
 MOUTH WITH WATER. GIVE LARGE AMOUNTS OF MILK OR WATER.
 CAUTION SHOULD BE GIVEN TO ASPIRATION OF FLUID INTO LUNGS
 PRODUCING CHEMICAL PNEUMONITIS. KEEP PATIENT CALM.
 CALL PHYSICIAN IMMEDIATELY.

SECTION IX - PREPARATION DATA

PREPARED BY: HEALTH AND SAFETY COMMITTEE DATE: 08 JAN 2011
 CONTACT: AL STRUTHMANN (Hon. B.Sc.) TEL: (519) 454-4370
 CANADA & USA TOLL FREE 1-888-658-5515 FAX: (519) 454-4362

NOTE: N. A. P. = NOT APPLICABLE

N. A. V. = NOT AVAILABLE

ADDITIONAL INFORMATION: THE INFORMATION IN THIS MSDS HAS BEEN OBTAINED FROM SOURCES BELIEVED TO BE RELIABLE.
 THE MANUFACTURER AND SUPPLIER PROVIDES NO WARRANTIES EXPRESS OR IMPLIED AND ASSUMES NO RESPONSIBILITY
 FOR THE ACCURACY OR THE COMPLETENESS OF THE DATA CONTAINED HEREIN. SEE DISCLAIMER ON PRODUCT LABEL.

1. Product and Company Identification

Product number 2051
 Material name SWISH GLASS CLEANER
 Revision date 10-01-2013
 Company information SWISH MAINTENANCE LIMITED
 PETERBOROUGH ON K9J8N4 CANADA, MEXICO
 Company phone
 Emergency telephone US 1-866-836-8855
 Emergency telephone outside US 1-952-852-4646
 Version # 03
 Supersedes date 08-01-2013
 Expiry Date 12-Jul-2016
 Product use Glass cleaner

2. Hazards Identification

Emergency overview CONTENTS UNDER PRESSURE.
 Aerosol. Pressurized container may explode when exposed to heat or flame. May be fatal if inhaled. Prolonged exposure may cause chronic effects.

Potential health effects
 Routes of exposure Inhalation. Ingestion. Skin contact. Eye contact.
 Eyes Contact with eyes may cause irritation. Health injuries are not known or expected under normal use.
 Skin May be harmful if absorbed through skin.
 Inhalation Intentional misuse by concentrating and inhaling the product can be harmful or fatal. Prolonged inhalation may be harmful.
 Ingestion Exposure by ingestion of an aerosol is unlikely. Components of the product may be absorbed into the body by ingestion.
 Target organs Respiratory system.
 2-Butoxy ethanol may be absorbed through the skin in toxic amounts if contact is repeated and prolonged and may cause blood damage. These effects have not been observed in humans.

Chronic effects May be harmful if absorbed through skin. Pregnant women or women of child-bearing age should not be exposed to this product.

Potential environmental effects May cause long-term adverse effects in the environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Butane	106-97-8	1 - 5
Ethanol	64-17-5	1 - 5
Ethylene Glycol Monobutyl Ether	111-76-2	1 - 5
Propane	74-98-6	1 - 5
Other components below reportable levels		60 - 100

4. First Aid Measures

First aid procedures

Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. If a contact lens is present, DO NOT delay irrigation or attempt to remove the lens. Continue rinsing. Get medical attention if irritation develops and persists.
Skin contact	Remove and isolate contaminated clothing and shoes. Wash off with warm water and soap. Get medical attention if irritation develops and persists. For minor skin contact, avoid spreading material on unaffected skin.
Inhalation	Move to fresh air. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Get medical attention, if needed
Ingestion	In the unlikely event of swallowing contact a physician or poison control center. Rinse mouth thoroughly. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Notes to physician

In case of shortness of breath, give oxygen. Symptoms may be delayed.

General advice

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Get medical attention if symptoms occur. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation.

5. Fire Fighting Measures

Flammable properties

Heat may cause the containers to explode. Ruptured cylinders may rocket.

Extinguishing media

Suitable extinguishing media	Water.
------------------------------	--------

Protection of firefighters

Specific hazards arising from the chemical	Contents under pressure. Pressurized container may explode when exposed to heat or flame.
--	---

Protective equipment for firefighters	Firefighters should wear full protective clothing including self contained breathing apparatus. Structural firefighters protective clothing will only provide limited protection. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
---------------------------------------	---

Fire fighting equipment/instructions

Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Do not direct water at source of leak or safety devices; icing may occur. Cool containers with flooding quantities of water until well after fire is out. Do not direct water at source of leak or safety devices as icing may occur. Use water spray to cool unopened containers. Containers should be cooled with water to prevent vapor pressure build up. Some of these materials, if spilled, may evaporate leaving a flammable residue.

Specific methods

Cool containers exposed to flames with water until well after the fire is out.

Explosion data

Sensitivity to static discharge	Not available.
Sensitivity to mechanical impact	Not available.

6. Accidental Release Measures

Personal precautions

Consider initial downwind evacuation for at least 500 meters (1/3 mile). Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Ventilate closed spaces before entering. Keep out of low areas. Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks). Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. For personal protection, see section 8 of the MSDS.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not contaminate water.

Methods for containment

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak you can do so without risk. If possible, turn leaking containers so that gas escapes rather than liquid. Move the cylinder to a safe and open area if the leak is irreparable. Prevent entry into waterways, sewers, basements or confined areas. Prevent entry into waterways, sewer, basements or confined areas.

Methods for cleaning up

Ventilate the area. Should not be released into the environment. Stop the flow of material, if this is without risk. Isolate area until gas has dispersed. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Clean up in accordance with all applicable regulations. For waste disposal, see section 13 of the MSDS.

Other information

Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling

Do not handle or store near an open flame, heat or other sources of ignition. Pressurized container: Do not pierce or burn, even after use. Do not use if spray button is missing or defective. Do not spray on a naked flame or any other incandescent material. Do not smoke while using or until sprayed surface is thoroughly dry. Do not cut, weld, solder, drill, grind, or expose containers to heat, flame, sparks, or other sources of ignition. All equipment used when handling the product must be grounded. Do not re-use empty containers. Use only with adequate ventilation. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get this material in contact with skin. Avoid prolonged exposure. Wash thoroughly after handling.

Storage

Contents under pressure. Do not expose to heat or store at temperatures above 120°F/49°C as can may burst. Do not puncture, incinerate or crush. Do not handle or store near an open flame, heat or other sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. Store in a well-ventilated place. Keep in an area equipped with sprinklers. Store away from incompatible materials (see Section 10 of the MSDS). Level 1 Aerosol (NFPA 30B)

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH Biological Exposure Indices

Components	Type	Value
2-Butoxyethanol (CAS 111-76-2)	BEI	200 mg/g

US. ACGIH Threshold Limit Values

Components	Type	Value
Ethyl Alcohol (CAS 64-17-5)	STEL	1000 ppm
2-Butoxyethanol (CAS 111-76-2)	TWA	20 ppm

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value
Butane (CAS 106-97-8)	TWA	1000 ppm
Ethyl Alcohol (CAS 64-17-5)	TWA	1880 mg/m ³
2-Butoxyethanol (CAS 111-76-2)	TWA	1000 ppm 97 mg/m ³
Propane (CAS 74-98-6)	TWA	20 ppm 1000 ppm

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value
Butane (CAS 106-97-8)	STEL	750 ppm
	TWA	600 ppm
Ethyl Alcohol (CAS 64-17-5)	STEL	1000 ppm
2-Butoxyethanol (CAS 111-76-2)	TWA	20 ppm

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value
Butane (CAS 106-97-8)	TWA	800 ppm
Ethyl Alcohol (CAS 64-17-5)	STEL	1000 ppm
2-Butoxyethanol (CAS 111-76-2)	TWA	20 ppm

Components	Type	Value
Butane (CAS 106-97-8)	TWA	1900 mg/m3 800 ppm
Ethyl Alcohol (CAS 64-17-5)	TWA	1880 mg/m3 1000 ppm
2-Butoxyethanol (CAS 111-76-2)	TWA	97 mg/m3 20 ppm
Propane (CAS 74-98-6)	TWA	1800 mg/m3 1000 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Ethyl Alcohol (CAS 64-17-5)	PEL	1900 mg/m3 1000 ppm
2-Butoxyethanol (CAS 111-76-2)	PEL	240 mg/m3 50 ppm
Propane (CAS 74-98-6)	PEL	1800 mg/m3 1000 ppm

Engineering controls Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye / face protection Wear safety glasses with side shields (or goggles).

Skin protection Wear protective gloves.

Respiratory protection In case of insufficient ventilation wear suitable respiratory equipment. If permissible levels are exceeded use NIOSH mechanical filter / organic vapor cartridge or an air-supplied respirator.

9. Physical & Chemical Properties

Appearance	Clear.
Boiling point	212 °F (100 °C) estimated
Color	Colorless.
Flash point	-156.00 °F (-104.44 °C) Propellant estimated
Form	Aerosol.
Melting point/Freezing point	Not available.
Odor	Butyl
Odor threshold	Not available.
pH	9.5 - 10.5 estimated
Physical state	Gas.
Vapor pressure	70 - 90 psig @ 70F estimated
Solubility (water)	Not available.
Specific gravity	0.961 estimated estimated
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Other data	
Heat of combustion	3.17 kJ/g estimated

10. Chemical Stability & Reactivity Information

Chemical stability Risk of ignition.

Conditions to avoid Aerosol containers are unstable at temperatures above 49°C. Avoid temperatures exceeding the flash point.

Hazardous decomposition products Not available.

*Possibility of hazardous reactions Hazardous polymerization does not occur.

11. Toxicological Information

Toxicological data

Product	Species	Test Results
Glème Glass Cleaner (CAS Mixture)		
<i>Acute</i>		
<i>Dermal</i>		
LD50	Rabbit	13586.2803 mg/kg, estimated
	Rat	7571 mg/kg
<i>Inhalation</i>		
LC50	Mouse	40423.0625 mg/l, 2 Hours, estimated 24176.2793 mg/l, 7 Hours, estimated 1313.3534 mg/l, 4 Hours, estimated
	Rat	79173.25 mg/l, 15 Minutes, estimated 11122.5186 mg/l, 4 Hours, estimated 75 mg/l/4h
<i>Oral</i>		
LD50	Dog	185.2165 g/kg, estimated
	Guinea pig	33.9778 g/kg, estimated
	Mouse	41.445 g/kg, estimated
	Rabbit	11.051 g/kg, estimated
	Rat	203.2327 g/kg, estimated
<i>Other</i>		
LD50	Mouse	12069.3428 mg/kg, estimated
	Rabbit	9670.5117 mg/kg, estimated
	Rat	8031.8926 mg/kg, estimated
Components		
Species		
Test Results		
Butane (CAS 106-97-8)		
<i>Acute</i>		
<i>Inhalation</i>		
LC50	Mouse	680 mg/l, 2 Hours
	Rat	658 mg/l, 4 Hours
Ethanol (CAS 64-17-5)		
<i>Acute</i>		
<i>Inhalation</i>		
LC50	Mouse	39 mg/l, 4 Hours
	Rat	20000 mg/l, 10 Hours
<i>Oral</i>		
LD50	Dog	5.5 g/kg
	Guinea pig	5.6 g/kg
	Mouse	3450 mg/kg
	Rat	6.2 g/kg
<i>Other</i>		
LD50	Mouse	933 mg/kg
	Rat	1440 mg/kg

Components	Species	Test Results
Ethylene Glycol Monobutyl Ether (CAS 111-76-2)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	400 mg/kg
<i>Inhalation</i>		
LC50	Mouse	700 mg/l, 7 Hours
	Rat	450 mg/l, 4 Hours
<i>Oral</i>		
LD50	Guinea pig	1.2 g/kg
	Mouse	1.2 g/kg
	Rabbit	0.32 g/kg
	Rat	560 mg/kg
<i>Other</i>		
LD50	Mouse	1130 mg/kg
	Rabbit	280 mg/kg
	Rat	340 mg/kg
Propane (CAS 74-98-6)		
Acute		
<i>Inhalation</i>		
LC50	Rat	> 1442.847 mg/l, 15 Minutes 658 mg/l/4h

* Estimates for product may be based on additional component data not shown.

Acute effects	Acute LD50: 7571 mg/kg, Rat, Dermal
Chronic effects	Hazardous by WHMIS criteria. Prolonged inhalation may be harmful. May be harmful if absorbed through skin. 2-Butoxy ethanol may be absorbed through the skin in toxic amounts if contact is repeated and prolonged. These effects have not been observed in humans. Prolonged exposure may cause chronic effects.
Carcinogenicity	Hazardous by WHMIS criteria.
ACGIH Carcinogens	
Ethanol (CAS 64-17-5)	A3 Confirmed animal carcinogen with unknown relevance to humans.
Ethylene Glycol Monobutyl Ether (CAS 111-76-2)	A3 Confirmed animal carcinogen with unknown relevance to humans.
IARC Monographs. Overall Evaluation of Carcinogenicity	
Ethylene Glycol Monobutyl Ether (CAS 111-76-2)	3 Not classifiable as to carcinogenicity to humans.
Reproductive effects	Can cause adverse reproductive effects - such as birth defects, miscarriages, or infertility.
Teratogenicity	Not expected to be hazardous by WHMIS criteria.

12. Ecological Information

Ecotoxicological data

Product	Species	Test Results
Gleme Glass Cleaner (CAS Mixture)		
Algae	IC50	Algae 11902 mg/L, 72 Hours
Crustacea	EC50	Daphnia 26428 mg/L, 48 Hours
Fish	LC50	Fish 36327 mg/L, 96 Hours

Components	Species	Test Results
Ethanol (CAS 64-17-5)		
Crustacea	EC50	Daphnia
		11744.5 mg/L, 48 Hours
Aquatic		
Crustacea	EC50	Water flea (Daphnia magna)
		7.7 - 11.2 mg/l, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas)
		> 100 mg/l, 96 hours
Ethylene Glycol Monobutyl Ether (CAS 111-76-2)		
Aquatic		
Fish	LC50	Inland silverside (Menidia beryllina)
		1250 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Ecotoxicity	LC50: 36327 mg/L, Fish, 96.00 Hours EC50: 26428 mg/L, Daphnia, 48.00 Hours IC50: 11902 mg/L, Algae, 72.00 Hours Components of this product have been identified as having potential environmental concerns.
Environmental effects	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Persistence and degradability	Not available.
Partition coefficient	
Butane	2.89
Ethanol	-0.31
Ethylene Glycol Monobutyl Ether	0.83
Propane	2.36

13. Disposal Considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Contents under pressure. Do not puncture, incinerate or crush. Do not allow this material to drain into sewers/water supplies. Dispose in accordance with all applicable regulations.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied. Do not re-use empty containers.

14. Transport Information

TDG

UN number	UN1950
UN proper shipping name	AEROSOLS, flammable
Hazard class	2.1
Marine pollutant	•
Special provisions	80 SOR/2002-306
Labels required	2.1
Packaging exceptions	If <1L: Limited Quantity

IATA

UN number	UN1950
UN proper shipping name	Aerosols, flammable
Transport hazard class(es)	2.1
Labels required	2.1
ERG code	10L
Special precautions for user	Read safety instructions, MSDS and emergency procedures before handling.
Packaging Exceptions	LTD QTY

IMDG

UN number	UN1950
UN proper shipping name	AEROSOLS
Transport hazard class(es)	2.1
Labels required	None
Special precautions for user	Read safety instructions, MSDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Packaging Exceptions Not applicable.
LTD QTY

IATA; IMDG; TDG



15. Regulatory Information

Canadian regulations

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS status

Controlled

WHMIS classification

A - Compressed Gas
D2A - Other Toxic Effects-VERY TOXIC
D2B - Other Toxic Effects-TOXIC

WHMIS labeling



Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)
Australia	Australian Inventory of Chemical Substances (AICS)	()
Canada	Domestic Substances List (DSL)	()
Canada	Non-Domestic Substances List (NDSL)	()
China	Inventory of Existing Chemical Substances in China (IECSC)	()
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	()
Europe	European List of Notified Chemical Substances (ELINCS)	()
Japan	Inventory of Existing and New Chemical Substances (ENCS)	()
Korea	Existing Chemicals List (ECL)	()
New Zealand	New Zealand Inventory	()
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	()
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	()

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other Information

Disclaimer

The information in the sheet was written based on the best knowledge and experience currently available. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates on to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

JOHNSON MANUFACTURING COMPANY
Material Safety Data Sheet
 To comply with 29CFR 1910.1200
 OSHA's Hazard Communication Standard

SOLDER**Tin/Lead Alloys****1. PRODUCT AND COMPANY INFORMATION**

Johnson Manufacturing Company
 114 Lost Grove Road
 Princeton IA 52768

Emergency Telephone 1-(563)-289-5123
 CHEMTREC AFTER HOURS 1-(800)-424-9300
 Revised 1/1/2015 by JMC Product Safety

2. HAZARD IDENTIFICATION**GHS Classification:**

Acute Tox. 4 *
 Aquatic Acute 1
 Chronic tox 2
 Repro tox 2
 Carcino 2

**GHS Label Elements:****LEAD & TIN
WARNING**

H Codes: H302, H332, H351, H361, H373, H410

Harmful if swallowed

Harmful if inhaled

Suspected of causing cancer

Suspected of damaging fertility or the unborn child

May cause damage to organs through prolonged or repeated exposure

Very toxic to aquatic life with long lasting effects

P Codes:

P264, 270, 281, 301+312, 330, 501, 260, 312, 330, 261, 271, 301+312, 304+340, 405, 273, 305+351+338, 201, 202, 314, 391, 308+313

Do not handle until all safety precautions have been read & understood. Avoid breathing dust/mist/vapors/fumes/spray. Do not get in eyes, on skin, or on clothing. Use in a well ventilated area. Wear protective gloves/protective clothing/eye protection/face protection. In case of inadequate ventilation use respiratory protection. Do not breathe dust/fume/gas/mist/vapor/spray. Do not eat, drink or smoke when using this product. IF SWALLOWED: Rinse mouth. DO NOT induce vomiting. Immediately call a POISON CENTER/Doctor. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Wash with soap & water. Get medical advice/attention if skin irritation or rash occurs or if you feel unwell. IF INHALED: Remove victim to fresh air and keep comfortable for breathing. Get medical advice/attention if you feel unwell. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call POISON CENTER/Doctor. Wash thoroughly after use. Wash contaminated clothing before reuse. Store in a closed compatible container in cool dry place. Avoid release to the environment. Dispose of contents/container in accordance with specified local/regional/national/international regulations for disposal. Keep out of the reach of children. Read label and SDS prior to use.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Component	CAS #	OSHA TWA	ACIGH TWA	Other limits	%
Tin	7440-31-5	2mg/M3	2mg/M3	NE	
* + Lead	7439-92-1	0.05mg/M3	0.05mg/M3	NE	% as specified

Only those ingredients listed in this section have been determined to be hazardous as defined in 29CFR 1910.1200.

An ingredient marked with an asterisk(*) is also listed in 29CFR 1910.1200(D) #4 as a known or suspected cancer hazard.

+ denotes a chemical regulated as toxic by the Environmental Protection Agency (EPA) as outlined in 40CFR Part 372 (section 313)

4. FIRST AID MEASURES

Signs and symptoms of exposure: Inhalation-Nose & throat irritation, headache, dizziness, difficulty breathing, coughing. Ingestion-nausea, vomiting, cramps. Skin-redness, burning, rash, dryness. Eye-redness, burning, tearing, blurred vision.

Medical conditions aggravated by exposure: Skin, kidney and respiratory conditions.

Emergency first aid procedures:

Skin: Flush with water immediately - Seek medical attention if necessary

Eyes: Flush with water for 15 minutes - Seek medical attention

Ingestion: DO NOT induce vomiting, drink large amounts of water - seek medical attention. Never give anything by mouth to an unconscious person

Inhalation: Remove to fresh air. Support respiration if required - Seek medical attention

5. FIREFIGHTING MEASURES

Extinguishing media: dry chemical.

Special fire fighting procedures: use self sustaining respiratory suit.

Unusual Fire and Explosion Hazards: May release Toxic metal & oxide fumes. High concentrations of dust may present explosion hazard. Water trapped below molten may explode thus spattering molten metal.

6. ACCIDENTAL RELEASE MEASURES

Methods and materials: Flush into chemical sewer or sweep up with a suitable absorbent. Wear adequate protection as described in section 8.

Environmental Precautions: Avoid release to the environment. Collect spillage.

7. HANDLING & STORAGE

Wash thoroughly after use. Wash contaminated clothing before reuse. Store in a closed corrosive resistant container, with corrosive resistant liner, in cool dry place. Keep out of the reach of children. Read label and SDS prior to use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limit Values: See section 3.

Respiratory Protection (type): HEPA mask required for fumes above TWA.

Ventilation: Local Exhaust preferred Special: NE

Mechanical: OK Other: NE

Protective Gloves: plastic or rubber **Eye Protection:** Goggles or face shield

Other Protective Clothing or Equipment: as required to avoid contact.

Work/Hygienic Practices: Wash after use. Follow good industrial hygienic practices.

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point: 3164 F

Specific Gravity: 7.8

Vapor Pressure (mm Hg): NE

Melting Point: NE

Vapor Density: NE

Evaporation Rate: <1 (butyl acetate=1)

Solubility in water: negligible

pH: NE

Flash Point: NE (TOC)

Flammable Limits: lel: NE uel: NE

Appearance and odor: Silver/Grey solid, odorless.

10. STABILITY AND REACTIVITY

Stability : STABLE **Conditions to avoid :** none

Incompatibility (materials to avoid): strong bases & acids, oxidizers, sulfides, halogens.

Hazardous Decomposition or Byproducts (incomplete combustion): May release Toxic metal & oxide fumes. High concentrations of dust may present explosion hazard. Water trapped below molten may explode thus spattering molten metal.

Hazardous Polymerization: WILL NOT OCCUR **Conditions to avoid:** none

11. TOXICOLOGICAL INFORMATION

Routes of entry: Inhalation: yes Skin: no Ingestion: yes

Health Hazards (acute and chronic): Contact with dust and fumes may cause skin, eye and respiratory irritation. Ingestion and/or inhalation of material or fumes may result in flu like symptoms, insomnia, muscle weakness, nausea and abdominal pain. gross inhalation or ingestion may be toxic and can result in death. Symptoms of toxicity may take hours or days to manifest. Chronic exposures, inhalation and ingestion, may result in kidney, red blood cell, reproductive and nervous system effects. Health effects may be cumulative over many exposures. Studies show that health risks vary by individual. Minimize exposure as a precaution. See OSHA 29CFR 1910.1025(subpart Z) for more information.

Carcinogenicity: not determined NPT? no IARC Monographs? Lead-suspect

12. ECOLOGICAL INFORMATION

Toxicity: NE
Bio-accumulative Potential: NE
PBT & vPvB Assessment: NE

Persistence & Degradability: NE
Mobility in Soil: NE
Other Adverse Effects: NE

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method: dispose of in accordance with all local state and federal regulations

Other Precautions: Avoid skin & eye contact, inhalation & ingestion of fumes and material. Wash contaminated clothing before reuse. Keep away from children.

14. TRANSPORT INFORMATION

DOT Classification: Non-Hazardous
Marine Pollutant: NE

15. REGULATORY INFORMATION

NFPA Classification (NFPA 325M, 8th edition)(Health, Flammability, Reactivity): 2-0-0
This product contains components known to the state of California to cause cancer or reproductive harm.

16. OTHER INFORMATION

The information and recommendations contained within this publication have been compiled from sources believed to be reliable and to represent the best information available to JOHNSON MANUFACTURING at the time of issue. No warranty, guarantee, or representation is made by JOHNSON MANUFACTURING nor does JOHNSON MANUFACTURING assume any responsibility in connection there within; nor can it be assumed that all acceptable safety measures or other safety measures may not be required under particular or exceptional conditions or circumstances.

NE = not established NA = not applicable

Form 303.118 Rev.D

SAFETY DATA SHEET



SO-BRITE PLUS

Section 1. Identification

GHS product identifier : SO-BRITE PLUS
Product code : 11803100, 11803150, 11803330, 11803470
SDS # : DUB00055
Other means of identification : Not available.
Product type : Liquid.
Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Vehicle Cleaner
Supplier/Manufacturer : DuBois Chemicals, Inc. DuBois Chemicals Canada, Inc.
3630 E. Kemper Road 1155 North Service Road West
Cincinnati, Ohio 45241 Unit 6
Phone: 1-800-438-2647 Oakville, Ontario, L6M 3E3 Canada
Phone: 1-866-861-3603
Emergency telephone number : 1-866-923-4919 (US and Canada)
01-651-523-0314 (Int'l and Mexico)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 1C
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger
Hazard statements : Causes severe skin burns and eye damage.

Precautionary statements

Prevention : Wear eye/face protection. Wear protective gloves. Wear protective clothing. Wash hands thoroughly after handling.
Response : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up.
Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Ingredient name	%	CAS number
Poly(oxy-1,2-ethanediyl), α -phenyl- ω -hydroxy-, phosphate	1 - 5	39464-70-5
glycollic acid	1 - 5	79-14-1
ammonium bifluoride	0.1 - 1	1341-49-7

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
- Inhalation** : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Skin contact** : Get medical attention immediately. Call a poison center or physician. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : Causes severe burns.
- Ingestion** : May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Section 4. First aid measures

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
- Ingestion** : Adverse symptoms may include the following:
stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.
- Specific hazards arising from the chemical** : In a fire or if heated, a pressure increase will occur and the container may burst.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
phosphorus oxides
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Methods for cleaning up**
- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

- Large spill** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	CAS #	ACGIH	OSHA	Mexico
ammonium bifluoride	1341-49-7	TWA: 2.5 mg/m ³ , (as F) 8 hours.	TWA: 2.5 mg/m ³ 8 hours. Form: Dust TWA: 2.5 mg/m ³ , (as F) 8 hours.	

- Engineering measures** : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Personal protection**
- Respiratory** : If a risk assessment indicates this is necessary, use a properly fitted, air-purifying or airfed respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. Recommended: splash goggles
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Section 8. Exposure controls/personal protection

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Personal protective equipment (Pictograms) :



Section 9. Physical and chemical properties

Appearance

Physical state	: Liquid.
Color	: Yellow. [Light]
Odor	: acidic smell
Odor threshold	: Not available.
pH	: 3.4
Melting point	: Not available.
Boiling point	: Not available.
Flash point	: Closed cup: >93.3°C (>199.9°F)
Burning time	: Not applicable.
Burning rate	: Not applicable.
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: Not available.
Relative density	: 1.06
Solubility	: Easily soluble in the following materials: cold water and hot water.
Solubility in water	: Not available.
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: Not available.
Elemental Phosphorus	: 0.9 %
VOC content	: Not available.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.
Incompatible materials	: Highly reactive or incompatible with the following materials: alkalis.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 10. Stability and reactivity

Storage : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 11. Toxicological information

Information on toxicological effects

Carcinogenicity

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
ammonium bifluoride	A4	3	-	-	-	-

Information on the likely routes of exposure : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes severe burns.

Ingestion : May cause burns to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Ingestion : Adverse symptoms may include the following:
stomach pains

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Section 11. Toxicological information

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	69214.3 mg/kg
Inhalation (vapors)	128.6 mg/l

Section 12. Ecological information

Ecotoxicity : Not available.

Aquatic ecotoxicity

Not available.

Section 13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

RCRA classification : D002 [corrosive]

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport information

IATA/IMDG/DOT/TDG: Please refer to the Bill of Lading/receiving documents for up to date shipping information.

Section 15. Regulatory information

U.S. Federal regulations : TSCA 12(b) one-time export: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
CERCLA: Hazardous substances.: ammonium bifluoride: 100 lbs. (45.4 kg);

EPA Registration Number : Not available.

Clean Air Act Section 112 : Not listed

(b) Hazardous Air Pollutants (HAPs)

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Immediate (acute) health hazard
Delayed (chronic) health hazard

State regulations

Massachusetts : None of the components are listed.

Section 15. Regulatory information

- New York** : None of the components are listed.
- New Jersey** : The following components are listed: PROPYLENE GLYCOL; 1,2-PROPANEDIOL
- Pennsylvania** : The following components are listed: 1,2-PROPANEDIOL
- California Prop. 65**
Not available.

Canada

Canadian lists

- Canadian NPRI** : None of the components are listed.
- Canada inventory** : At least one component is not listed in DSL but all such components are listed in NDSL.
- Canadian PCP/DIN Number** : Not available.

International regulations

- International lists** :
- Australia inventory (AICS):** Not determined.
 - China inventory (IECSC):** Not determined.
 - Japan inventory:** Not determined.
 - Korea inventory:** Not determined.
 - Malaysia Inventory (EHS Register):** Not determined.
 - New Zealand Inventory of Chemicals (NZIoC):** Not determined.
 - Philippines inventory (PICCS):** Not determined.
 - Taiwan inventory (CSNN):** Not determined.

Section 16. Other information

History

- Date of printing** : 7/16/2015.
- Date of issue/Date of revision** : 7/16/2015.
- Date of previous issue** : 9/26/2014.
- Version** : 2

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Section 1: PRODUCT & COMPANY IDENTIFICATION

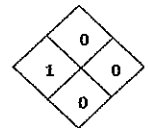
Product Name: Crystal Simple Green® Industrial Cleaner and Degreaser
Additional Names: Simple Green® Safety Towels (fluid only)

Manufacturer's Part Number: **Please refer to page 4*

Company: Sunshine Makers, Inc.
15922 Pacific Coast Highway
Huntington Beach, CA 92649 USA
Telephone: 800-228-0709 • 562-795-6000 Fax: 562-592-3830
Emergency Phone: Chem-Tel 24-Hour Emergency Service: 800-255-3924

Section 2: HAZARDS IDENTIFICATION

Emergency Overview: CAUTION. Irritant. This is a clear colored liquid with a chemical/detergent odor. Safety towels are infused with a diluted version of mixture.



NFPA/HMIS Rating:
Health = 1 = slight
Fire, Reactivity, and Special = 0 = minimal

Potential Health Effects

- Eye Contact:** Mildly irritating.
- Skin Contact:** No adverse effects expected under typical use conditions. Prolonged exposure may cause dryness. Chemically sensitive individuals may experience mild irritation.
- Ingestion:** May cause stomach or intestinal irritation if swallowed.
- Inhalation:** No adverse effects expected under typical use conditions. Adequate ventilation should be present for prolonged usage in small enclosed areas.

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS Number</u>	<u>Percent Range</u>
Water	7732-18-5	≥ 78%
2-butoxyethanol	111-76-2	≤ 6%
Ethoxylated Alcohol Mixture	Proprietary	≤ 5%
Tetrapotassium Pyrophosphate	7320-34-5	≤ 5%
Sodium Citrate	68-04-2	≤ 5%
Fragrance	Proprietary	≤ 1%

Section 4: FIRST AID MEASURES

- If Inhaled:** If adverse effect occurs, move to fresh air.
If on skin: If adverse effect occurs, rinse skin with water.
If in eyes: Flush with plenty of water. After 5 minutes of flushing, remove contact lenses, if present. Continue flushing for at least 10 more minutes. If irritation persists seek medical attention.
If ingested: Drink plenty of water to dilute.

Section 5: FIRE FIGHTING MEASURES

This formula is stable, non-flammable, and will not burn. No special procedures necessary

Flammability: Non-flammable

Flash Point: Non-flammable

Suitable Extinguishing Media: Use Dry chemical, CO₂, water spray or "alcohol" foam.

Extinguishing Media to Avoid: High volume jet water.

Special Exposure Hazards: In event of fire created carbon oxides, oxides of phosphorus may be formed.

Special Protective Equipment: Wear positive pressure self-contained breathing apparatus; Wear full protective clothing.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions: See section 8 – personal protection.

Environmental Precautions: Do not allow into open waterways and ground water systems.

Method for Clean Up: Dilute with water and rinse into sanitary sewer system or soak up with inert absorbent material.

Section 7: HANDLING AND STORAGE

Handling: Keep container tightly closed. Ensure adequate ventilation. Keep out of reach of children.

Storage: Keep in cool dry area.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limit Values:

2-butoxyethanol

Tetrapotassium Pyrophosphate

OSHA PEL

TWA 50 ppm (240 mg/m³)

ACGIH TLV

20 ppm (97 mg/m³)

5 mg/m³

Exposure Controls:

Eye Contact: Use protective glasses if splashing or spray-back is likely.

Respiratory: Use in well ventilated areas.

Skin Contact: Prolonged exposure or dermal sensitive individuals should use protective gloves.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear Liquid	Vapor Pressure:	18 mmHg @20°C; 23.5 mmHg @26°C
Odor:	No added odor; chemical/detergent	Density:	8.5 lb/gal;
Specific Gravity:	1.020 ± 0.010	Water Solubility:	100%
pH:	9.0 – 9.9 (Crystal)	VOC composite Partial Pressure:	TBD
	8.0 – 8.9 (Safety Towel)	Nutrient Content:	Phosphorous: 0.28%
Boiling Point:	~212°F (100.6°C)		Sulfur: ~180 ppm Fluorine: ~90 ppm
Freezing Point:	~ 16°F (-9°C)		Chloride: ~110 ppm
VOC Fluid:	CARB Method 310 = 5.8%*	SCAQMD Method 313 = 6.6%*	* product must be diluted to meet air quality regulations
VOC Fluid Triggers only:	CARB Method 310 = 3.8%		
VOC Safety towels:	CARB Method 310 = 1%		

Section 10: STABILITY AND REACTIVITY

Stability: Stable
 Materials to Avoid: None known
 Hazardous Decomposition Products: Normal products of combustion - CO, CO2; Oxides of Phosphorous may occur.

Section 11: TOXICOLOGICAL INFORMATION

Acute Toxicity: Oral LD₅₀ (rat) > 5 g/kg body weight
 Dermal LD₅₀ (rabbit) > 5 g/kg body weight
 Toxicity calculated from ingredients using OECD SERIES ON TESTING AND ASSESSMENT Number 33

Carcinogens: No ingredients are listed by OSHA, IARC, or NTP as known or suspected carcinogens.

Section 12: ECOLOGICAL INFORMATION

Hazard to wild mammals: Low, based on toxicology profile
 Hazard to avian species: Low, based on toxicology profile
 Hazard to aquatic organisms: Low, based on toxicology profile
 Chemical Fate Information: Readily Biodegradable based on biodegradability profile of ingredients

Section 13: DISPOSAL CONSIDERATIONS

Appropriate Method for Disposal:

- Unused Product: *Dilute with water to use concentration and dispose by sanitary sewer.
- Used Product: *This product can enter into clarifiers and oil/water separators. Used product may be hazardous depending on the cleaning application and resulting contaminants.
- Empty Containers: *Triple-rinse with water and offer for recycling if available in your area. Otherwise, dispose as non-hazardous waste.

*Dispose of used or unused product, and empty containers in accordance with the local, State, Provincial, and Federal regulations for your location. Never dispose of used degreasing rinsates into lakes, streams, and open bodies of water or storm drains.

Material Safety Data Sheet: **Crystal Simple Green® Industrial Cleaner/Degreaser**

Simple Green® Safety Towels

Version No. 19128-12A Date of Issue: December 2012

ANSI-Z400.1-2003 Format

Section 14: TRANSPORT INFORMATION

U.S. Department of Transportation (DOT) / Canadian TDG: Not Regulated

IMO / IDMG: Not classified as Dangerous

ICAO/ IATA: Not classified as Dangerous

ADR/RID: Not classified as Dangerous

U.N. Number: Not Required Proper Shipping Name: Detergent Solution

Hazard Class: Non-Hazardous Marine Pollutant: No

Section 15: REGULATORY INFORMATION

All components are listed on: EINECS, TSCA, DSL and AICS Inventory.

No components listed under: Clean Air Act Section 112; Clean Water Act 307 & 311

SARA Title III 2-butoxyethanol is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 as Category N230 – Certain Glycol Ethers.

RCRA Status: Not a hazardous waste CERCLA Status: No components listed

State Right To Know Lists

2-butoxyethanol Illinois, Massachusetts, New Jersey, Pennsylvania, Rhode Island

WHMIS Classification – Not classified as hazardous

Name	Toxic Substances List – Schedule 1 – CEPA (Canadian Environmental Protection Act)	NPRI Inventory
2-butoxyethanol	Yes	No

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by Canada's Controlled Products Regulation.

Section 16: OTHER INFORMATION

Questions about the information found on this MSDS should be directed to:

SUNSHINE MAKERS, INC. – TECHNICAL DEPARTMENT

15922 Pacific Coast Hwy. Huntington Beach, CA 92649

Phone: 800/228-0709 [8am-5pm Pacific time, Mon-Fri] Fax: 562/592-3830 Email: infoweb@simplegreen.com

National Stock Numbers & Industrial Numbers:

Crystal	Part Number	NSN	Size
	19024	7930-01-418-1151	24 oz. spray (12/cs)
	19128	7930-01-418-1152	1 Gal. (6/cs)
	19005	7930-01-418-1153	5 Gal.

Safety Towels	Part Number	Size
	13322	5 count pouch (50/cs)
	13351	75-count canister (6/cs)

****International Part Numbers May Differ.**

DISCLAIMER: The information provided with this MSDS is furnished in good faith and without warranty of any kind. Personnel handling this material must make independent determinations of the suitability and completeness of information from all sources to assure proper use and disposal of this material and the safety and health of employees and customers. Sunshine Makers, Inc. assumes no additional liability or responsibility resulting from the use of, or reliance on this information.

92-19177-6



Material Safety Data Sheet

Copyright, 2008, 3M Company. All rights reserved. Copying and/or downloading of this information for the purpose of properly utilizing 3M products is allowed provided that: (1) the information is copied in full with no changes unless prior written agreement is obtained from 3M, and (2) neither the copy nor the original is resold or otherwise distributed with the intention of earning a profit thereon.

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: 3M(TM) Scotch-Weld(TM) Rubber and Gasket Adhesive 4799
MANUFACTURER: 3M
DIVISION: Industrial Adhesives and Tapes Division
ADDRESS: 3M Center
St. Paul, MN 55144-1000

EMERGENCY PHONE: 1-800-364-3577 or (651) 737-6501 (24 hours)

Issue Date: 01/28/2008
Supersedes Date: 05/17/2005

Document Group: 10-2754-9

Product Use:

Specific Use: Adhesive for rubber to metal.
Intended Use: Industrial use

SECTION 2: INGREDIENTS

<u>Ingredient</u>	<u>C.A.S. No.</u>	<u>% by Wt</u>
Naphtha (Petroleum), solvent-refined light	64741-84-0	30 - 60
n-Hexane	110-54-3	10 - 30
Talc	14807-96-6	5 - 10
Toluene	108-88-3	3 - 7
Hydrocarbon Resin	68478-07-9	3 - 7
Polyisoprene	9003-31-0	3 - 7
Styrene-Butadiene Polymer	9003-55-8	3 - 7
Magnesium Resinate	68611-24-5	1 - 5
Cyclohexane	110-82-7	1 - 5
Zinc Resinate	68188-23-8	1 - 5
Ethyl Alcohol	64-17-5	0.1 - 1
Zinc Oxide	1314-13-2	0.1 - 1
Carbon Black	1333-86-4	0.1 - 0.5

SECTION 3: HAZARDS IDENTIFICATION

3.1 EMERGENCY OVERVIEW

Odor, Color, Grade: black, mild odor

General Physical Form: Liquid

Immediate health, physical, and environmental hazards: Closed containers exposed to heat from fire may build pressure and explode. Extremely flammable liquid and vapor. Vapors may travel long distances along the ground or floor to an ignition source and flash back. Contains a chemical or chemicals which can cause cancer. May cause target organ effects. Contains a chemical or chemicals which can cause birth defects or other reproductive harm.

3.2 POTENTIAL HEALTH EFFECTS

Eye Contact:

Mild Eye Irritation: Signs/symptoms may include redness, pain, and tearing.

Skin Contact:

Moderate Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, and dryness.

May be absorbed through skin and cause target organ effects.

Inhalation:

Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Prolonged or repeated exposure may cause:

Respiratory Effects: Signs/symptoms may include cough, shortness of breath, chest tightness, wheezing, increased heart rate, bluish colored skin (cyanosis), sputum production, changes in lung function tests, and/or respiratory failure.

May be absorbed following inhalation and cause target organ effects.

Ingestion:

Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

May be absorbed following ingestion and cause target organ effects.

Target Organ Effects:

Central Nervous System (CNS) Depression: Signs/symptoms may include headache, dizziness, drowsiness, incoordination, nausea, slowed reaction time, slurred speech, giddiness, and unconsciousness.

Prolonged or repeated exposure may cause:

Ocular Effects: Signs/symptoms may include blurred or significantly impaired vision.

Auditory Effects: Signs/symptoms may include hearing impairment, balance dysfunction and ringing in the ears.

Peripheral Neuropathy: Signs/symptoms may include tingling or numbness of the extremities, incoordination, weakness of the hands and feet, tremors and muscle atrophy.

Olfactory Effects: Signs/symptoms may include decreased ability to detect odors and/or complete loss of smell.

Neurological Effects: Signs/symptoms may include personality changes, lack of coordination, sensory loss, tingling or numbness of the extremities, weakness, tremors, and/or changes in blood pressure and heart rate.

Contains a chemical or chemicals which can cause birth defects or other reproductive harm.

Carcinogenicity:

Contains a chemical or chemicals which can cause cancer.

NOTE: This product contains ethanol. In IARC published Monograph No. 44, entitled, "Alcohol Drinking", the carcinogenicity of ethanol was determined based on chronic exposure to ethanol through human consumption of alcoholic beverages. This is not an expected effect during the foreseeable use of this product.

<u>Ingredient</u>	<u>C.A.S. No.</u>	<u>Class Description</u>	<u>Regulation</u>
Carbon Black	1333-86-4	Group 2B	International Agency for Research on Cancer
Ethyl Alcohol	64-17-5	Group 1	International Agency for Research on Cancer

SECTION 4: FIRST AID MEASURES

4.1 FIRST AID PROCEDURES

The following first aid recommendations are based on an assumption that appropriate personal and industrial hygiene practices are followed.

Eye Contact: Flush eyes with large amounts of water. If signs/symptoms persist, get medical attention.

Skin Contact: Remove contaminated clothing and shoes. Immediately flush skin with large amounts of water. Get medical attention. Wash contaminated clothing and clean shoes before reuse.

Inhalation: Remove person to fresh air. If signs/symptoms develop, get medical attention.

If Swallowed: Do not induce vomiting unless instructed to do so by medical personnel. Give victim two glasses of water. Never give anything by mouth to an unconscious person. Get medical attention.

SECTION 5: FIRE FIGHTING MEASURES

5.1 FLAMMABLE PROPERTIES

Autoignition temperature	<i>No Data Available</i>
Flash Point	-14 °F [<i>Test Method: Closed Cup</i>]
Flammable Limits - LEL	1 % volume
Flammable Limits - UEL	7 % volume

5.2 EXTINGUISHING MEDIA

Use fire extinguishers with class B extinguishing agents (e.g., dry chemical, carbon dioxide).

5.3 PROTECTION OF FIRE FIGHTERS

Special Fire Fighting Procedures: Water may not effectively extinguish fire; however, it should be used to keep fire-exposed containers and surfaces cool and prevent explosive rupture. Wear full protective equipment (Bunker Gear) and a self-contained breathing apparatus (SCBA).

Unusual Fire and Explosion Hazards: Closed containers exposed to heat from fire may build pressure and explode. Extremely

flammable liquid and vapor. Vapors may travel long distances along the ground or floor to an ignition source and flash back.

Note: See STABILITY AND REACTIVITY (SECTION 10) for hazardous combustion and thermal decomposition information.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Accidental Release Measures: Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. Call 3M-HELPS line (1-800-364-3577) for more information on handling and managing the spill. Evacuate unprotected and untrained personnel from hazard area. The spill should be cleaned up by qualified personnel. Remove all ignition sources such as flames, smoking materials, and electrical spark sources. Use only non-sparking tools. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice. Warning! A motor could be an ignition source and could cause flammable gases or vapors in the spill area to burn or explode. Contain spill. For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water. Cover spill area with a fire-extinguishing foam. An aqueous film forming foam (AFFF) is recommended. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Remember, adding an absorbent material does not remove a toxic, corrosivity or flammability hazard. Collect as much of the spilled material as possible using non-sparking tools. Clean up residue with an appropriate solvent selected by a qualified and authorized person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and MSDS. Collect the resulting residue containing solution. Place in a metal container approved for transportation by appropriate authorities. Seal the container. Dispose of collected material as soon as possible.

In the event of a release of this material, the user should determine if the release qualifies as reportable according to local, state, and federal regulations.

SECTION 7: HANDLING AND STORAGE

7.1 HANDLING

Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water. Ground containers securely when transferring contents. Wear low static or properly grounded shoes. Avoid breathing of vapors, mists or spray. Avoid static discharge. Avoid eye contact with vapors, mists, or spray. Keep out of the reach of children. Vapors may ignite explosively. May cause flash fire. Prevent build-up of vapors - open all windows and doors. Maintain vapor concentrations below recommended exposure limits. Use only with cross-ventilation. Without adequate ventilation, vapors may settle in low-lying areas. Keep away from heat, sparks, and open flame. Do not smoke or ignite matches, lighters, etc. Avoid contact with oxidizing agents.

7.2 STORAGE

Store away from acids. Store away from heat. Store out of direct sunlight. Keep container in well-ventilated area. Keep container tightly closed. Store away from oxidizing agents.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 ENGINEERING CONTROLS

Provide appropriate local exhaust ventilation on open containers. Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below Occupational Exposure Limits and/or control mist, vapor, or spray. If ventilation is not adequate, use respiratory protection equipment.

8.2 PERSONAL PROTECTIVE EQUIPMENT (PPE)

8.2.1 Eye/Face Protection

Avoid eye contact with vapors, mists, or spray.

The following eye protection(s) are recommended: Safety Glasses with side shields, Indirect Vented Goggles.

8.2.2 Skin Protection

Avoid skin contact.

Select and use gloves and/or protective clothing to prevent skin contact based on the results of an exposure assessment. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible materials.

Gloves made from the following material(s) are recommended: Polyvinyl Alcohol (PVA).

8.2.3 Respiratory Protection

Avoid breathing of vapors, mists or spray.

Select one of the following NIOSH approved respirators based on airborne concentration of contaminants and in accordance with OSHA regulations: Half facepiece or fullface air-purifying respirator with organic vapor cartridges. Consult the current 3M Respiratory Selection Guide for additional information or call 1-800-243-4630 for 3M technical assistance.

8.2.4 Prevention of Swallowing

Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water.

8.3 EXPOSURE GUIDELINES

<u>Ingredient</u>	<u>Authority</u>	<u>Type</u>	<u>Limit</u>	<u>Additional Information</u>
Carbon Black	ACGIH	TWA	3.5 mg/m3	Table A4
Carbon Black	CMRG	TWA	0.5 mg/m3	
Carbon Black	OSHA	TWA	3.5 mg/m3	Table Z-1
Cyclohexane	ACGIH	TWA	100 ppm	
Cyclohexane	OSHA	TWA	300 ppm	Table Z-1
Ethyl Alcohol	ACGIH	TWA	1000 ppm	Table A4
Ethyl Alcohol	OSHA	TWA	1000 ppm	Table Z-1
n-Hexane	ACGIH	TWA	50 ppm	Skin Notation*
n-Hexane	OSHA	TWA, Vacated	50 ppm	Table Z-1A
n-Hexane	OSHA	TWA	500 ppm	Table Z-1A
Talc	ACGIH	TWA, respirable	2 mg/m3	Table A4
Talc	CMRG	TWA, as respirable dust	0.5 mg/m3	
Talc	OSHA	TWA, respirable	2 mg/m3	Table Z-1A
Toluene	ACGIH	TWA	20 ppm	Table A4
Toluene	CMRG	STEL	75 ppm	Skin Notation*
Toluene	OSHA	TWA, Vacated	100 ppm	
Toluene	OSHA	STEL, Vacated	150 ppm	
Toluene	OSHA	TWA	200 ppm	Table Z-2
Toluene	OSHA	CEIL	300 ppm	Table Z-2
Zinc Oxide	ACGIH	TWA, respirable	2 mg/m3	
Zinc Oxide	ACGIH	STEL	10 mg/m3	
Zinc Oxide	OSHA	TWA, as fume	5 mg/m3	Table Z-1
Zinc Oxide	OSHA	TWA, respirable	5 mg/m3	Table Z-1
Zinc Oxide	OSHA	STEL, Vacated, as fume	10 mg/m3	
Zinc Oxide	OSHA	TWA, Vacated, as dust	10 mg/m3	
Zinc Oxide	OSHA	TWA, as total dust	15 mg/m3	Table Z-1

* Substance(s) refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

VAC Vacated PEL: Vacated Permissible Exposure Limits [PEL] are enforced as the OSHA PEL in some states. Check with your local regulatory agency.

SOURCE OF EXPOSURE LIMIT DATA:

ACGIH: American Conference of Governmental Industrial Hygienists
 CMRG: Chemical Manufacturer Recommended Guideline
 OSHA: Occupational Safety and Health Administration
 AIHA: American Industrial Hygiene Association Workplace Environmental Exposure Level (WEEL)

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Odor, Color, Grade:	black, mild odor
General Physical Form:	Liquid
Autoignition temperature	<i>No Data Available</i>
Flash Point	-14 °F [<i>Test Method:</i> Closed Cup]
Flammable Limits - LEL	1 % volume
Flammable Limits - UEL	7 % volume
Boiling point	140 °F
Density	0.82 g/ml
Vapor Density	3 [<i>Ref Std:</i> AIR=1]
Vapor Pressure	120 mmHg [<i>Details:</i> CONDITIONS: @ 68F]
Specific Gravity	0.82 [<i>Ref Std:</i> WATER=1]
pH	<i>No Data Available</i>
Melting point	<i>No Data Available</i>
Solubility in Water	Slight (less than 10%)
Evaporation rate	2.50 [<i>Ref Std:</i> ETHER=1]
Hazardous Air Pollutants	Approximately 22 % weight [<i>Test Method:</i> Calculated]
Volatile Organic Compounds	587 g/l [<i>Test Method:</i> calculated SCAQMD rule 443.1]
Percent volatile	Approximately 65 % weight
VOC Less H2O & Exempt Solvents	587 g/l [<i>Test Method:</i> calculated SCAQMD rule 443.1]
Viscosity	7500 - 18000 centipoise

SECTION 10: STABILITY AND REACTIVITY

Stability: Stable.

Materials and Conditions to Avoid: Strong oxidizing agents

Hazardous Polymerization: Hazardous polymerization will not occur.

Hazardous Decomposition or By-Products

<u>Substance</u>	<u>Condition</u>
Aldehydes	During Combustion
Hydrocarbons	During Combustion
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion
Ketones	During Combustion
Oxides of Zinc	During Combustion

SECTION 11: TOXICOLOGICAL INFORMATION

Please contact the address listed on the first page of the MSDS for Toxicological Information on this material and/or its components.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION

Not determined.

CHEMICAL FATE INFORMATION

Not determined.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Method: Incinerate in a permitted hazardous waste incinerator. As a disposal alternative, dispose of waste product in a permitted hazardous waste facility.

EPA Hazardous Waste Number (RCRA): D001 (Ignitable)

Since regulations vary, consult applicable regulations or authorities before disposal.

SECTION 14: TRANSPORT INFORMATION

ID Number(s):

62-4799-2631-3, 62-4799-2635-4, 62-4799-5530-4, 62-4799-6530-3, 62-4799-7530-2, 62-4799-8530-1, 62-4799-9530-0, 62-4799-9531-8, XS-0414-1121-5

Please contact the emergency numbers listed on the first page of the MSDS for Transportation Information for this material.

SECTION 15: REGULATORY INFORMATION

US FEDERAL REGULATIONS

Contact 3M for more information.

311/312 Hazard Categories:

Fire Hazard - Yes Pressure Hazard - No Reactivity Hazard - No Immediate Hazard - Yes Delayed Hazard - Yes

Section 313 Toxic Chemicals subject to the reporting requirements of that section and 40 CFR part 372 (EPCRA):

<u>Ingredient</u>	<u>C.A.S. No</u>	<u>% by Wt</u>
Toluene	108-88-3	3 - 7
Zinc Resinate (ZINC COMPOUNDS)	68188-23-8	1 - 5
n-Hexane	110-54-3	10 - 30
Cyclohexane	110-82-7	1 - 5
Zinc Oxide (ZINC COMPOUNDS)	1314-13-2	0.1 - 1

This material contains a chemical which requires export notification under TSCA Section 12[b]:

<u>Ingredient (Category if applicable)</u>	<u>C.A.S. No</u>	<u>Regulation</u>	<u>Status</u>
Cyclohexane	110-82-7	Toxic Substances Control Act (TSCA) 4 Test Rule Chemicals	Applicable

STATE REGULATIONS

Contact 3M for more information.

CALIFORNIA PROPOSITION 65

<u>Ingredient</u>	<u>C.A.S. No.</u>	<u>Classification</u>
Carbon Black	1333-86-4	**Carcinogen
Toluene	108-88-3	*Developmental Toxin

* WARNING: contains a chemical or chemicals which can cause birth defects or other reproductive harm.

** WARNING: contains a chemical which can cause cancer.

CHEMICAL INVENTORIES

The components of this product are in compliance with the chemical notification requirements of TSCA.

All applicable chemical ingredients in this material are listed on the European Inventory of Existing Chemical Substances (EINECS), or are exempt polymers whose monomers are listed on EINECS.

Contact 3M for more information.

INTERNATIONAL REGULATIONS

Contact 3M for more information.

This MSDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: OTHER INFORMATION

NFPA Hazard Classification

Health: 2 Flammability: 3 Reactivity: 0 Special Hazards: None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

Revision Changes:

Section 1: Product name was modified.
Section 1: Product use information was modified.
Section 1: Division name was modified.
Copyright was modified.
Section 3: Potential effects from eye contact was modified.
Section 3: Potential effects from inhalation information was modified.
Section 7: Handling information was modified.
Section 8: Engineering controls information was modified.
Section 8: Prevention of swallowing information was modified.
Section 3: Other health effects information was modified.
Page Heading: Product name was modified.
Section 9: Property description for optional properties was modified.
Section 9: Specific gravity information was modified.
Section 9: Density information was added.
Section 14: ID Number Heading Template 1 was added.
Section 14: ID Number(s) Template 1 was added.
Section 2: Ingredient table was added.
Section 15: TSCA section 12[b] text was added.
Section 15: EPCRA 313 information was added.
Section 15: EPCRA 313 text was added.
Section 8: Exposure guidelines ingredient information was added.
Section 8: Exposure guidelines legend was added.
Section 8: Exposure guideline note was added.
Section 15: TSCA section 12[b] information was added.
Section 8: Exposure guidelines data source legend was added.
Section 3: Carcinogenicity table was added.
Section 3: Carcinogenicity heading was added.
Section 15: California proposition 65 ingredient information was added.
Section 15: California proposition 65 heading was added.
Section 15: California proposition 65 cancer warning was added.

DISCLAIMER: The information in this Material Safety Data Sheet (MSDS) is believed to be correct as of the date issued. 3M MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of use or application. Given the variety of factors that can affect the use and application of a 3M product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for user's method of use or application.

3M provides information in electronic form as a service to its customers. Due to the remote possibility that electronic transfer may have resulted in errors, omissions or alterations in this information, 3M makes no representations as to its completeness or accuracy. In addition, information obtained from a database may not be as current as the information in the MSDS available directly from 3M.

3M MSDSs are available at www.3M.com

SAFETY DATA SHEET



RUST PREVENT SYN 3-X

Section 1. Identification

GHS product identifier : RUST PREVENT SYN 3-X
Product code : 11640100, 11640330, 11640470
SDS # : MS0100704
Other means of identification : Not available.
Product type : Liquid.

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Water-soluble synthetic rust inhibitor and grinding fluid
Supplier/Manufacturer : DuBois Chemicals, Inc. DuBois Chemicals Canada, Inc.
3630 E. Kemper Road 1155 North Service Road West
Cincinnati, Ohio 45241 Unit 6
Phone: 1-800-438-2647 Oakville, Ontario, L6M 3E3 Canada
Phone: 1-866-861-3603
Emergency telephone number : 1-866-923-4919 (US and Canada)
01-651-523-0314 (Int'l and Mexico)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2

GHS label elements

Hazard pictograms :



Signal word : Warning

Hazard statements : Causes serious eye irritation.
Causes skin irritation.

Precautionary statements

Prevention : Wear eye/face protection. Wear protective gloves. Wash hands thoroughly after handling.

Response : IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Not applicable.

Disposal : Not applicable.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Ingredient name	%	CAS number
2-aminoethanol	1 - 5	141-43-5

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : Causes skin irritation.
- Ingestion** : Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:
irritation
redness
- Ingestion** : No specific data.

Section 4. First aid measures

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
phosphorus oxides
metal oxide/oxides

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	CAS #	ACGIH	OSHA	Mexico
2-aminoethanol	141-43-5	TWA: 3 ppm 8 hours. TWA: 7.5 mg/m ³ 8 hours. STEL: 6 ppm 15 minutes. STEL: 15 mg/m ³ 15 minutes.	TWA: 3 ppm 8 hours. TWA: 6 mg/m ³ 8 hours.	LMPE-PPT: 3 ppm 8 hours. LMPE-PPT: 8 mg/m ³ 8 hours. LMPE-CT: 15 mg/m ³ 15 minutes. LMPE-CT: 6 ppm 15 minutes.

- Engineering measures** : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Personal protection**
- Respiratory** : If a risk assessment indicates this is necessary, use a properly fitted, air-purifying or airfed respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. Recommended: splash goggles
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Section 8. Exposure controls/personal protection

Personal protective
equipment (Pictograms)



Section 9. Physical and chemical properties

Appearance

Physical state	: Liquid.
Color	: Amber.
Odor	: Not available.
Odor threshold	: Not available.
pH	: 10.5
Melting point	: Not available.
Boiling point	: Not available.
Flash point	: Closed cup: >93.3°C (>199.9°F) [Tagliabue (ASTM D56)]
Burning time	: Not applicable.
Burning rate	: Not applicable.
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: Not available.
Relative density	: 1.16
Solubility	: Easily soluble in the following materials: cold water and hot water.
Solubility in water	: Not available.
Partition coefficient: n- octanol/water	: Not available.
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: Not available.
Elemental Phosphorus	: 1.01 %
VOC content	: 2.01 %

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.
Incompatible materials	: Extremely reactive or incompatible with the following materials: oxidizing materials.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 10. Stability and reactivity

Storage : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 11. Toxicological information

Information on toxicological effects

Information on the likely routes of exposure : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

Eye contact : Causes serious eye irritation.
Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
Skin contact : Causes skin irritation.
Ingestion : Irritating to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
 pain or irritation
 watering
 redness
Inhalation : No specific data.
Skin contact : Adverse symptoms may include the following:
 irritation
 redness
Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.
Carcinogenicity : No known significant effects or critical hazards.
Mutagenicity : No known significant effects or critical hazards.
Teratogenicity : No known significant effects or critical hazards.
Developmental effects : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Section 11. Toxicological information

route	ATE value
Oral	85572.1 mg/kg
Dermal	54726.4 mg/kg
Inhalation (vapors)	547.3 mg/l

Section 12. Ecological information

Ecotoxicity : Not available.

Aquatic ecotoxicity

Not available.

Section 13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

IATA/IMDG/DOT/TDG: Please refer to the Bill of Lading/receiving documents for up to date shipping information.

Section 15. Regulatory information

U.S. Federal regulations : TSCA 12(b) one-time export: No products were found.
 TSCA 12(b) annual export notification: No products were found.
 United States inventory (TSCA 8b): All components are listed or exempted.

EPA Registration Number : Not available.

Clean Air Act Section 112 : Not listed

(b) Hazardous Air Pollutants (HAPs)

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Immediate (acute) health hazard

State regulations

Massachusetts : The following components are listed: ETHANOLAMINE

New York : None of the components are listed.

New Jersey : The following components are listed: ETHANOLAMINE; ETHANOL, 2-AMINO-

Pennsylvania : The following components are listed: ETHANOL, 2-AMINO-

California Prop. 65

Not available.

Canada

Canadian lists

Canadian NPRI : The following components are listed: Phosphorus (total)

Section 15. Regulatory information

Canada inventory : All components are listed or exempted.

Canadian PCP/DIN Number : Not available.

International regulations

International lists :

- Australia inventory (AICS)**: All components are listed or exempted.
- China inventory (IECSC)**: All components are listed or exempted.
- Japan inventory**: Not determined.
- Korea inventory**: All components are listed or exempted.
- Malaysia Inventory (EHS Register)**: Not determined.
- New Zealand Inventory of Chemicals (NZIoC)**: All components are listed or exempted.
- Philippines inventory (PICCS)**: All components are listed or exempted.
- Taiwan inventory (CSNN)**: Not determined.

Section 16. Other information

History

Date of printing : 7/17/2015.

Date of issue/Date of revision : 7/17/2015.

Date of previous issue : 10/23/2014.

Version : 2

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Product Information

MATERIAL SAFETY DATA SHEET

HMIS Hazard Rating



MAINTENANCE LIMITED
P.O. Box 3000, Peterborough, Ontario Canada K9J 8N4
Telephone (705) 745-5763 1-800-461-7695

Product Name: Quatro 15

Product Use: Disinfectant/Cleaner

Emergency Tel: Canutec (613) 996-6666

Hazardous Ingredients

- Ingredients: Alcohol ethoxylate, Tetrasodium ethylenediaminetetraacetate, Sodium metasilicate, Alkyl(C12-18) dimethyl benzyl ammonium chloride, Alkyl(C12-14) dimethyl ethylbenzyl ammonium chloride

Physical Data

- Appearance and odour: Red; fruity
Vapour pressure (mm Hg): NE
Vapour density (Air=1): NE
Solubility in water (20°C): Soluble
Physical state: Liquid
Boiling point (°C): NE
Freezing point (°C): NE
Specific gravity (Water=1): 1.068
% Volatile (WT %): 84
Evaporation rate (Water=1): NE
pH (as supplied): 13.00
Odour threshold (ppm): NE
Coefficient of water/oil distribution: NE
Viscosity: Water thin.

Fire and Explosion Data

- Flammability: Not flammable
Flashpoint (°C, TCC): None
UEL: NE
Hazardous combustion products: May include and are not limited to ammonia, oxides of carbon and nitrogen.
Means of extinction: Dry chemical, carbon dioxide, alcohol foam.
Special fire hazards: Firefighters should wear self-contained breathing apparatus.
Explosion Data -- sensitivity to mechanical impact: NE
Explosion Data -- sensitivity to static discharge: NE

NA = Not Available

Table with 3 columns: CAS#, WT%, and ACGIH-TLV. Rows include 34398-01-1, 64-402-8, 6834-92-0, 68391-01-5, and 85409-23-0.

Reactivity Data

Conditions for chemical instability: Stable
Incompatible materials: Strong oxidizing agents and strong acids.
Conditions of reactivity: NE
Hazardous decomposition products: May include and are not limited to ammonia, oxides of carbon and nitrogen when heated to decomposition.

First Aid

Eye: Flush eyes with large amount of water for 15 minutes while holding eyelids open. If irritation occurs or persists, seek medical attention.
Skin: Wash skin with soap and water. If irritation develops, seek medical attention.
Completely clean clothing, shoes and leather goods before reuse or discard.
Inhalation: If affected, remove to fresh air immediately. If symptoms persist, seek medical attention.

Preventive Measures

Gloves: Use impervious gloves
Eye protection: Use safety glasses.
Respiratory protection: Not normally required if good ventilation is maintained.
Other protective equipment: As required by employer code.
Engineering control: General ventilation normally adequate.
Leak and spill procedure: Before attempting clean up, consult MSDS. Small spills may be absorbed with non-reactive material absorbent and placed in suitable, covered, labeled containers. Remove traces by flushing with water to a chemical sewer. Prevent large spills from entering sewers or waterways. Consult emergency services and supplier for advice.
Waste disposal: Review or contact local, provincial and federal authorities for disposal methods.
Storage & handling requirements: KEEP OUT OF REACH OF CHILDREN. Keep in a closed, labeled container. Store in a cool, dry, well-ventilated area away from incompatible materials.
Special shipping information: Do not freeze.

NE = Not Established

Table with 3 columns: ACGIH-TLV, LD50, and LC50. Rows include NA, >2,000 mg/kg (Oral, Rat), 1,658 mg/kg (Oral, Rat), 1,153 mg/kg (Oral, Rat), 50-500 mg/kg (Oral, Rat), and 50-500 mg/kg (Oral, Rat).

Table with 2 columns: Hazard Category and Rating. Rows include HEALTH (2), FLAMMABILITY (0), REACTIVITY (0), PERSONAL PROTECTION (B), and 0 - Insignificant, 1 - Slight, 2 - Moderate, 3 - High, 4 - Extreme.

Toxicological Information

Route of Entry: Eye, Skin, Inhalation, Ingestion
Effects of Acute Exposure:
Eye contact: May cause severe irritation, reddening and swelling of tissues around eyes.
Skin: May cause moderate to high irritation.
Skin absorption: NE
Inhalation: May cause nose, throat and respiratory tract irritation and coughing, headache.
Ingestion: May cause stomach distress, nausea or vomiting.
Effects of Chronic Exposure:
Skin: Prolonged or repeated exposure may cause skin drying, dermatitis and dermatitis.
Irritation: Non-hazardous by WHMIS criteria.
Sensitization to product: None known.
Carcinogenicity: None known.
Teratogenicity, Mutagenicity, Reproductive effects: NE
Toxicological synergistic products: NA

Regulatory Information

TDG Pin/Class: Corrosive Liquids, N.O.S. (Sodium Silicate)
Class 8 UN 1760 PG III
WHMIS Class: Registered drug product.
SARA Title III: NE

Preparation Information

Prepared By: Charlotte Products Technical Services
Date: May 16, 2014 Tel: (705) 740-2880

Disclaimer: Information for this material safety data sheet was obtained from sources considered technically accurate and reliable. While every effort has been made to ensure full disclosure of product hazards...

98-01959-6 / 98-14436-6

Material Safety Data Sheet

PRECISION ^{TM/MC} XL EP2



000003000891

Version 3.0

Revision Date 2015/09/15

Print Date 2015/09/15

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : PRECISION ^{TM/MC} XL EP2
Product code : PXL2P17, PXL2KGL, PXL2DRL, PXL2CBG, PXL2C30, PXL2, PXL2BLK

Manufacturer or supplier's details
Petro-Canada Lubricants Inc.
2310 Lakeshore Road West
Mississauga ON L5J 1K2
Canada

Emergency telephone number
Suncor Energy: +1 403-296-3000;
Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : PRECISION XL EP greases are high performance, long life, EP greases designed for trouble-free lubrication of a wide range of automotive and industrial equipment.

Prepared by : Product Safety: +1 905-804-4752

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Table with 2 columns: Property (Appearance, Colour, Odour) and Description (Stringy, smooth, semi-solid; green; Mild grease like).

Potential Health Effects

Primary Routes of Entry : Eye contact, Ingestion, Inhalation, Skin contact

Aggravated Medical Condition : None known.

Carcinogenicity:

IARC No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH No component of this product present at levels greater than or

Material Safety Data Sheet

PRECISION ^{TIM/MC} **XL EP2**

000003000891

Version 3.0

Revision Date 2015/09/15

Print Date 2015/09/15



equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical Name	CAS-No.	Concentration (%)
Paraffin oils	8012-95-1	70 - 90 %
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity	72623-85-9	30 - 50 %
distillates (petroleum), solvent-dewaxed heavy paraffinic	64742-65-0	10 - 20 %
Long-chain alkyl amine		0.1 - 1 %

SECTION 4. FIRST AID MEASURES

- If inhaled : Move to fresh air.
Artificial respiration and/or oxygen may be necessary.
Seek medical advice.
- In case of skin contact : In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash skin thoroughly with soap and water or use recognized skin cleanser.
Wash clothing before reuse.
Seek medical advice.
In the event of a known, or potential, high pressure injection injury, worker should obtain immediate medical evaluation.
- In case of eye contact : Remove contact lenses.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Obtain medical attention.
- If swallowed : Rinse mouth with water.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Never give anything by mouth to an unconscious person.
Seek medical advice.
- Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

Material Safety Data Sheet

PRECISION^{TM/MC} XL EP2

000003000891



Version 3.0

Revision Date 2015/09/15

Print Date 2015/09/15

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : No information available.
- Specific hazards during firefighting : Cool closed containers exposed to fire with water spray.
- Hazardous combustion products : Carbon oxides (CO, CO₂), sulphur oxides (SO_x), nitrogen oxides (NO_x), phosphorus oxides (PO_x), sulphur compounds (H₂S), calcium oxides (CaO_x), antimony oxides (SbO_x), potassium oxide, aldehydes, sulfides, alkyl mercaptans, diphenylamine, alkenes, smoke and irritating vapours as products of incomplete combustion.
- Further information : Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Material can create slippery conditions.
- Environmental precautions : If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods and materials for containment and cleaning up : Prevent further leakage or spillage if safe to do so.
Remove all sources of ignition.
Soak up with inert absorbent material.
Non-sparking tools should be used.
Ensure adequate ventilation.
Contact the proper local authorities.

SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid contact with skin, eyes and clothing.
Do not ingest.
Keep away from heat and sources of ignition.
Keep container closed when not in use.
- Conditions for safe storage : Store in original container.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Material Safety Data Sheet

PRECISION ^{TM/MC} **XL EP2**

000003000891

Version 3.0

Revision Date 2015/09/15

Print Date 2015/09/15



Keep in a dry, cool and well-ventilated place.
Keep in properly labelled containers.
To maintain product quality, do not store in heat or direct sunlight.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type : organic vapour filter

Hand protection

Material : neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R) .

Remarks : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eye protection : Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Protective measures : Wash hands and face before breaks and immediately after handling the product.
Wash contaminated clothing before re-use.
Ensure that eyewash station and safety shower are proximal to the work-station location.

Hygiene measures : Wash face, hands and any exposed skin thoroughly after handling.
Remove and wash contaminated clothing and gloves, including the inside, before re-use.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Material Safety Data Sheet

PRECISION^{TM/MC} XL EP2

000003000891



Version 3.0

Revision Date 2015/09/15

Print Date 2015/09/15

Appearance	: Stringy, smooth, semi-solid.
Colour	: green
Odour	: Mild grease like.
Odour Threshold	: No data available
pH	: No data available
Pour point	: -12 °C (10 °F) Mineral Oil Blend
Boiling point/boiling range	: No data available
Flash point	: 290 °C (554 °F) Method: Cleveland open cup Mineral Oil Blend
Fire Point	: 300 °C (572 °F) Mineral Oil Blend
Auto-Ignition Temperature	: No data available
Evaporation rate	: No data available
Flammability	: Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available
Density	: 0.9083 kg/l (15 °C / 59 °F)
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: 219.9 cSt (40 °C / 104 °F) Mineral Oil Blend 17.9 cSt (100 °C / 212 °F) Mineral Oil Blend
Explosive properties	: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	: No data available
Incompatible materials	: Reactive with oxidising agents, reducing agents, acids and

Material Safety Data Sheet

PRECISION ^{TM/MC} **XL EP2**

000003000891



Version 3.0

Revision Date 2015/09/15

Print Date 2015/09/15

alkalis.

Hazardous decomposition products : May release COx, NOx, SOx, POx, H2S, CaOx, SbOx, KOx, aldehydes, sulfides, alkyl mercaptans, diphenylamine, alkenes, ammonia, metal oxides, halogenated compounds, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : Eye contact
Ingestion
Inhalation
Skin contact

Acute toxicity

Product:

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

Components:

lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity:

Acute oral toxicity : LD50 Rat: > 5,000 mg/kg,

Acute inhalation toxicity : LC50 Rat: > 5.2 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 Rabbit: > 2,000 mg/kg,

distillates (petroleum), solvent-dewaxed heavy paraffinic:

Acute oral toxicity : LD50 Rat: > 5,000 mg/kg,

Acute dermal toxicity : LD50 Rabbit: > 5,000 mg/kg,

Skin corrosion/irritation

Product:

Remarks: No data available

Components:

distillates (petroleum), solvent-dewaxed heavy paraffinic:

Result: No skin irritation

Serious eye damage/eye irritation

Product:

Material Safety Data Sheet

PRECISION^{TM/MC} XL EP2

000003000891



Version 3.0

Revision Date 2015/09/15

Print Date 2015/09/15

Remarks: No data available

Components:

distillates (petroleum), solvent-dewaxed heavy paraffinic:

Result: No eye irritation

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Aspiration toxicity

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Bioaccumulative potential

No data available

Material Safety Data Sheet

PRECISION ^{TM/MC} **XL EP2**

000003000891



Version 3.0

Revision Date 2015/09/15

Print Date 2015/09/15

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues

: The product should not be allowed to enter drains, water courses or the soil.
Offer surplus and non-recyclable solutions to a licensed disposal company.
Waste must be classified and labelled prior to recycling or disposal.
Send to a licensed waste management company.
Dispose of as hazardous waste in compliance with local and national regulations.
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulation

IATA-DGR

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

49 CFR

Not regulated as a dangerous good

TDG

Not regulated as a dangerous good

Special precautions for user

Not applicable

SECTION 15. REGULATORY INFORMATION

WHMIS Classification : Not controlled.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

The components of this product are reported in the following inventories:

DSL

On the inventory, or in compliance with the inventory

TSCA

All chemical substances in this product are either listed on the

Material Safety Data Sheet

PRECISION^{TM/MC} XL EP2

000003000891



Version 3.0

Revision Date 2015/09/15

Print Date 2015/09/15

ELINCS

TSCA Inventory or are in compliance with a TSCA Inventory exemption.

At least one component is not listed in EINECS but all such components are listed in ELINCS.

SECTION 16. OTHER INFORMATION

For Copy of (M)SDS : The Canadian Controlled Products Regulations (CPR) (Under the Hazardous Products Act, part of the WHMIS legislation) only apply to WHMIS Controlled (i.e., hazardous) products. Therefore, the CPR and the 3-year update rule specified therein do not apply to WHMIS Non-Controlled products. Although this is true, customarily Petro-Canada reviews and updates Non-Controlled product MSDS if a customer requests such an update. These Non-Controlled product updates are given a lower priority than Controlled products but are handled as soon as practicable. If you would like to verify if the MSDS you have is the most current, or you require any further information, please contact:
Internet: lubricants.petro-canada.ca/msds
Western Canada, telephone: 1-800-661-1199; fax: 1-800-378-4518
Ontario & Central Canada, telephone: 1-800-268-5850; fax: 1-800-201-6285
Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 1-800-201-6285
For Product Safety Information: 1 905-804-4752

Prepared by : Product Safety: +1 905-804-4752

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Product Information

NON

Swish

MAINTENANCE LIMITED
P.O. Box 3000, Peterborough, Ontario Canada K9J 8N4
Telephone (705) 745-5763, 1-800-461-7695

Product Name: Powerhouse Spray & Wipe Cleaner

Product Use: General Cleaner

Emergency Tel: Canutec (613) 996-6666

Hazardous Ingredients

- Ingredients
- Propylene glycol n-butyl ether
- Propylene glycol n-propyl ether
- Monothanolamine

MATERIAL SAFETY DATA SHEET

HMIS Hazard Rating

HEALTH	2	0 - Insignificant
FLAMMABILITY	0	1 - Slight
REACTIVITY	0	2 - Moderate
PERSONAL PROTECTION	B	3 - High
		4 - Extreme

(4071)

NA = Not Available

CAS#	WT%
5131-66-8	3-7
1569-01-3	3-7
141-43-5	1-5

ACGIH-TLV

- NA
- NA
- 3 ppm TWA

NE = Not Established

LD ₅₀
2,700 mg/kg (Oral, Rat)
2,519 mg/kg (Oral, Rat)
1,720 mg/kg (Oral, Rat)

LC ₅₀
>651 ppm 4 hrs. Rat
>2,230 ppm 6 hrs. Rat
NA

Physical Data

- Appearance and odour: Red, peppermint.
- Vapour pressure (mm Hg): NE
- Vapour density (Air=1): NE
- Solubility in water (20°C): Soluble
- Physical state: Liquid
- Boiling point (°C): NE
- Freezing point (°C): NE
- Specific gravity (Water=1): 1.001
- % Volatile (Wt %): 97
- Evaporation rate (Water=1): NE
- pH (as supplied): 11.55
- Odour threshold (ppm): NE
- Coefficient of water/oil distribution: NE
- Viscosity: Water thin.

Fire and Explosion Data

- Flammability: Not Flammable
- Flashpoint (°C, TCC): None
- LEL: NE
- UEL: NE
- Hazardous combustion products: May include and are not limited to oxides of carbon and nitrogen.
- Means of extinction: Dry chemical, carbon dioxide, alcohol foam.
- Special fire hazards: Firefighters should wear self-contained breathing apparatus.
- Explosion Data - sensitivity to mechanical impact: NE
- Explosion Data - sensitivity to static discharge: NE

Reactivity Data

- Conditions for chemical instability: Stable
- Incompatible materials: Strong oxidizing agents and strong acids.
- Conditions of reactivity: NE
- Hazardous decomposition products: May include and are not limited to oxides of carbon and nitrogen when heated to decomposition.

First Aid

- Eye: Flush eyes with large amount of water for 15 minutes while holding eyelids open. If irritation occurs or persists, seek medical attention.
- Skin: Wash skin with soap and water. If irritation develops, seek medical attention. Completely clean clothing, shoes and leather goods before reuse or discard.
- Inhalation: If affected, remove to fresh air immediately. If symptoms persist, seek medical attention.
- Ingestion: Do not induce vomiting. Rinse mouth with water; then drink one glass of water. Contact a doctor. Never give anything by mouth if victim is unconscious, is rapidly losing consciousness or is convulsing.

Preventive Measures

- Gloves: Latex, neoprene, nitrile, rubber. Confirm with a reputable supplier first.
- Eye protection: Safety glasses.
- Respiratory protection: Not normally required if good ventilation is maintained.
- Other protective equipment: As required by employer code.
- Engineering control: General ventilation normally adequate. Local exhaust for dust, mists or fumes.
- Leak and spill procedure: Before attempting clean up, consult MSDS. Small spills may be absorbed with non-reactive material absorbent and placed in suitable, covered, labeled containers. Prevent large spills from entering sewers or waterways. Consult emergency services or supplier for advice.
- Waste disposal: Review or contact local, provincial and federal authorities for disposal methods.
- Storage & handling requirements: KEEP OUT OF REACH OF CHILDREN. Keep in a closed, labeled container. Store in a cool, dry, well-ventilated area away from incompatible materials.
- Special shipping information: Do not freeze.

Toxicological Information

- Route of Entry: Eye, Skin Contact, Inhalation, Ingestion
- Effects of Acute Exposure:
 - Eye contact: May cause irritation.
 - Skin contact: May cause irritation.
 - Skin absorption: NE
- Inhalation: May cause respiratory tract irritation and coughing, headache.
- Ingestion: May cause stomach distress, nausea or vomiting.
- Effects of Chronic Exposure:
 - Skin: Prolonged exposure may cause skin drying, defatting and dermatitis.
 - Irritancy: Hazardous by WHMIS criteria.
 - Sensitization to product: None known.
 - Carcinogenicity: None known.
 - Teratogenicity, Mutagenicity, Reproductive effects: NE
 - Toxicological synergistic products: NA
- Regulatory Information**
 - TDG Pin/Class: Not regulated under TDG.
 - WHMIS Class: F
 - SARA Title III: NE
- Preparation Information**
 - Prepared By: Charlotte Products Technical Services
 - Date: May 16, 2014
 - Tel: (705) 740-2880



Disclaimer: Information for this material safety data sheet was obtained from sources considered technically accurate and reliable. While every effort has been made to ensure full disclosure of product hazards, in some cases data is not available and is so stated. Since conditions of actual product use are beyond control of this supplier, it is assumed that users of this material have been fully trained accordingly to the mandatory requirements of WHMIS. No warranty, expressed or implied, is made and supplier will not be liable for any losses, injuries or consequential damages which may result from the use of, or reliance on, any information contained within this form. If you require independent information on ingredients in this or any other material, we recommend contact with the Canadian Centre for Occupational Safety and Health (CCOHS) in Hamilton, Ontario (1-800-263-9469) or CCST in Montreal, Quebec (514-873-3990).

NONE.

Product Name: Oxygen

MSDS No.: E-4638-J

Date: Oct. 15, 2013

Praxair Material Safety Data Sheet

1. Chemical Product and Company Identification

Product Name: Oxygen	Trade Name: Oxygen, Medipure®
Product Use: Many.	
Chemical Name: Oxygen	Synonym: Dioxygen
Chemical Formula: O ₂	Chemical Family: Permanent Gas.
Telephone: Emergencies: * 1-800-363-0042	Supplier /Manufacture: Praxair Canada Inc. 1 City Centre Drive Suite 1200 Mississauga, ON L5B 1M2
	Phone: 905-803-1600
	Fax: 905-803-1682

**Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier or Praxair sales representative.*

2. Hazards Identification

Emergency Overview

WARNING! High pressure, oxidizing gas. Vigorously accelerates combustion. Self-contained breathing apparatus may be required by rescue workers.

ROUTES OF EXPOSURE: Inhalation.

EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:

INHALATION: Breathing 80% or more oxygen at atmospheric pressure for more than a few hours may cause nasal stuffiness, cough, sore throat, chest pain and breathing difficulty. Breathing oxygen at higher pressure increases the likelihood of adverse effects within a shorter time period. Breathing pure oxygen under pressure may cause lung damage and also central nervous system effects resulting in dizziness, poor coordination, tingling sensation, visual and hearing disturbances, muscular twitching, unconsciousness and convulsions. Breathing of oxygen under pressure may cause prolongation of adaptation to darkness and reduced peripheral vision.

SKIN CONTACT: No harm expected.

SKIN ABSORPTION: No evidence of adverse effects from available information.

SWALLOWING: This product is a gas at normal temperature and pressure.

EYE CONTACT: No evidence of adverse effects from available information.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE:

No evidence of adverse effects from available information.

OTHER EFFECTS OF OVEREXPOSURE:

See "Notes to Physician", in the "First Aid" section.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

See "Notes to Physician", in the "First Aid" section.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:

None currently known.

CARCINOGENICITY:

Not listed as carcinogen by OSHA, NTP or IARC.

3. Composition and Information on Ingredients

COMPONENTS	CAS NUMBER	CONCENTRATION % by Mole
Oxygen	7782-44-7	100

4. First Aid Measures**INHALATION:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. Keep patient warm and at rest. Get medical attention. Advise the physician that the victim has been exposed to high concentration of oxygen.

SKIN CONTACT:

No harm expected.

SWALLOWING:

This product is a gas at normal temperature and pressure.

EYE CONTACT:

No harm expected.

NOTES TO PHYSICIAN:

Supportive treatment should include immediate sedation, anti-convulsive therapy if needed, and rest. Animal studies suggest that the administration of certain drugs, including phenothiazine drugs and chloroquine, increase the susceptibility to toxicity from oxygen at high concentrations or pressures. Animal studies also indicate that vitamin E deficiency may increase susceptibility to oxygen toxicity. Airway obstruction during high oxygen tension may cause alveolar collapse following absorption of the oxygen. Similarly, occlusion of the eustachian tubes may cause retraction of the eardrum and obstruction of the paranasal sinuses may produce "vacuum-type" headache. Newborn premature infants exposed to high oxygen concentrations may suffer delayed retinal damage, which can progress, to retinal detachment and blindness (retrolental fibroplasia). Retinal damage can also occur in adults exposed to 100% oxygen under greater than atmospheric pressure, particularly in individuals whose retinal circulation has been previously compromised.

All individuals exposed for only periods to oxygen at high pressure and all that exhibit overt oxygen toxicity should have ophthalmologic examination.

5. Fire Fighting Measures

FLAMMABLE : No. **IF YES, UNDER WHAT CONDITIONS?** Vigorously accelerates combustion.

EXTINGUISHING MEDIA:

Vigorously accelerates combustion. Use media appropriate for surrounding fire. Water (i.e., safety shower) is the preferred extinguishing media for clothing fires.

PRODUCTS OF COMBUSTION:

None.

PROTECTION OF FIREFIGHTERS:

WARNING! Evacuate all personnel from danger area. Immediately deluge cylinders with water from maximum distance until cool; then move them away from fire area if without risk.

SPECIFIC PHYSICAL AND CHEMICAL HAZARDS:

Oxidizing agent, vigorously accelerates combustion. Contact with flammable materials may cause fire or explosion. Container may rupture due to heat of fire. Vapours are extremely irritating. Contact may cause burns to skin and eyes. No part of a container should be subjected to a temperature higher than 52 C. See incompatibility in Section 10. Most containers are provided with a pressure relief device designed to vent contents when they are exposed to elevated temperature. Smoking, flames and electric sparks in the presence of enriched oxygen atmospheres are potential explosion hazards.

SENSITIVITY TO IMPACT:

Avoid impact against container.

SENSITIVITY TO STATIC DISCHARGE:

Not applicable.

PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS:

Firefighters should wear self-contained breathing apparatus and full fire-fighting turnout gear.

FLAMMABLE LIMITS IN AIR, % by volume:

LOWER: Not applicable.

UPPER: Not applicable.

FLASH POINT:

Not applicable.

AUTOIGNITION TEMPERATURE:

Not applicable.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**Personal Precautions:**

WARNING! Shut off flow if you can do so without risk. Ventilate area or move cylinder to a well-ventilated area. Remove all flammable materials from vicinity. Oxygen must never be permitted to strike an oily surface, greasy clothes, or other combustible material.

Environmental Precautions:

Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, provincial, and local regulations. If necessary call your local supplier.

7. Handling and Storage

PRECAUTIONS TO BE TAKEN IN HANDLING:

Use piping and equipment adequately designed to withstand pressures to be encountered. Ground all equipment. Store and use with adequate ventilation at all times. Use only in a closed system constructed of corrosion resistant materials. NOTE: Reverse flow into cylinder may cause rupture. Use a check valve or other protective apparatus in any lines or piping from the cylinder to prevent reverse flow. For additional information refer to CGA pamphlet P-1. (See section 16 for more details).

WHEN USED IN WELDING AND CUTTING: Read and understand the manufacturer's instructions and the precautionary label on the product. See American Standard Z49.1 "Safety in Welding and Cutting" published by the American Welding Society, P.O. Box 351040, Miami, Florida, 33135.

Note: Suitability for use as a component in underwater breathing gas mixtures is to be determined by or under the

supervision of personnel experienced in the use of underwater breathing gas mixtures. Become familiar with the effects, methods, frequency and duration of use, hazards, side effects and precautions to be taken.

PRECAUTIONS TO BE TAKEN IN STORAGE:

Store and use with adequate ventilation. Separate flammable cylinders from oxygen, chlorine, and other oxidizers by at least 6 m or use a barricade of non-combustible material. This barricade should be at least 1.5 m high and have a fire resistance rating of at least ½ hour. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Post "No Smoking or Open Flames" signs in storage and use areas. There must be no sources of ignition. All electrical equipment in storage areas must be explosion-proof. Storage areas must meet national electric codes for Class 1 hazardous areas. Store only where temperature will not exceed 52 C. Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods. For additional information refer to CGA pamphlet P-2305(for welding and cutting). See section 16.

OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE:

High-pressure, oxidizing gas. Use piping and equipment adequately designed to withstand pressures to be encountered. **Vigorously accelerates combustion.** Keep oil, grease, and combustibles away. **Store and use with adequate ventilation at all times.** Close valve after each use; keep closed even when empty. **Prevent reverse flow.** Reverse flow into cylinder may cause rupture. Use a check valve or other protective device in any line or piping from the cylinder. **When returning cylinder to supplier, be sure valve is closed, then install valve outlet plug tightly. Never work on a pressurized system.** If there is a leak, close the cylinder valve. Vent the system down in a safe and environmentally sound manner in compliance with all federal, provincial, and local laws; then repair the leak. **Never place a compressed gas cylinder where it may become part of an electrical circuit.**

RECOMMENDED PUBLICATIONS:

Additional information on storage, handling, and use of this product is provided in **NFPA 55: Standard for the Storage, Use, and Handling of Compressed and Liquefied Gases in Portable Cylinders**, published by the National Fire Protection Association.

See also Praxair publication P-14-153, *Guidelines for Handling Gas Cylinders and Containers*. Obtain from your local supplier.

8. Exposure Controls/Personal Protection

INGREDIENTS	CAS NUMBER	LD ₅₀ (Species & Routes)	LC ₅₀ (Rat, 4 hrs.)	Exposure Limits
Oxygen	7782-44-7	Not applicable.	Not applicable.	None.

IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH):

VENTILATION/ENGINEERING CONTROLS:

LOCAL EXHAUST: Use a local exhaust system, if necessary, to prevent increased oxygen concentration and, in welding, to keep hazardous fumes and gases below applicable TLVs in the worker's breathing zone.

MECHANICAL (General): General exhaust ventilation may be acceptable if it can maintain a supply of air that is not too rich in oxygen an, during welding, can keep hazardous fumes and gases below the applicable TLVs in the worker's breathing zone.

SPECIAL: None.

OTHER: None.

PERSONAL PROTECTION:

RESPIRATORY PROTECTION: None required under normal use. However, air-supplied respirators are required while working in confined spaces with this product. For welding, use air-purifying or air-supplied respirators, as appropriate, where local or general exhaust ventilation is inadequate. Adequate ventilation must keep worker exposure below applicable TLVs for fumes, gases and other by-products of welding with oxygen. Selection should be based on the current CSA standard Z94.4, "Selection, Care, and Use of Respirators". Respirators should be approved by NIOSH and MSHA.

SKIN PROTECTION: Wear work gloves when handling cylinders.

EYE PROTECTION: Wear safety glasses when handling cylinders.

Select in accordance with the current CSA standard Z94.3, "Industrial Eye and Face Protection", and any provincial regulations, local bylaws or guidelines.

OTHER PROTECTIVE EQUIPMENT: Metatarsal shoes for cylinder handling. Protective clothing where needed. Cuffless trousers should be worn outside the shoes. Select in accordance with the current CSA standard Z195, "Protective Foot Wear", and any provincial regulations, local bylaws or guidelines.

9. Physical and Chemical Properties

PHYSICAL STATE: Gas.	FREEZING POINT: -218.78°C (-361.8°F)	pH:	Not applicable.
BOILING POINT: -182.96°C (-297.3°F)	VAPOUR PRESSURE: Not applicable.	MOLECULAR WEIGHT:	32 g/mole
SPECIFIC GRAVITY: LIQUID (Water = 1) Not applicable.	SOLUBILITY IN WATER: Negligible.		
SPECIFIC GRAVITY: VAPOUR (air = 1) 1.105 g/ml @ 21.10	EVAPORATION RATE (Butyl Acetate=1): Not applicable.	COEFFICIENT OF WATER/OIL DISTRIBUTION:	Not applicable.
VAPOUR DENSITY: 0.0013 g/ml @ 21.10	% VOLATILES BY VOLUME: 100% (v/v).	ODOUR THRESHOLD:	Odourless.
APPEARANCE & ODOUR: Colourless.		Odourless.	

10. Stability and Reactivity

STABILITY:	The product is stable.
CONDITIONS OF CHEMICAL INSTABILITY:	Compatibility with plastics should be confirmed prior to use.
INCOMPATIBILITY (materials to avoid):	Combustible materials, asphalt, flammable materials, especially oils and greases. Oxygen reacts with many materials.
HAZARDOUS DECOMPOSITION PRODUCTS:	None.
HAZARDOUS POLYMERIZATION:	Will not occur.

CONDITIONS TO AVOID:

None known.

CONDITIONS OF REACTIVITY:

None known.

11. Toxicological Information

ACUTE DOSE EFFECTS: The welding process may generate hazardous fumes and gases. See Sections 10 and 16 for additional information.

STUDY RESULTS:

At atmospheric concentration and pressure, oxygen poses no toxicity hazards. At high concentrations, newborn premature infants may suffer delayed retinal damage (retrolental fibroplasia) that can progress to retinal detachment and blindness. Retinal damage may also occur in adults exposed to 100% oxygen for extended periods (24 to 48 hours) or at greater than atmospheric pressure, particularly in individuals whose retinal circulation has been previously compromised. All individuals exposed for long periods to oxygen at high pressure and all who exhibit overt oxygen toxicity should have ophthalmologic examinations.

At two or more atmospheres, toxicity to the Central Nervous System (CNS) occurs. Symptoms include nausea, vomiting, dizziness or vertigo, muscle twitching, vision changes, and loss of consciousness and generalized seizures. At three atmospheres, CNS toxicity occurs in less than two hours; at six atmospheres, in only a few minutes.

Patients with chronic obstructive pulmonary disease retain carbon dioxide abnormally. If oxygen is administered, raising their blood oxygen concentration, their breathing becomes depressed and retained carbon dioxide rises to a dangerous level.

Animal studies suggest that the administration of certain drugs, including phenothiazine drugs and chloroquine, increases the susceptibility to toxicity from oxygen at high concentrations or pressures. Animal studies also indicate that vitamin E deficiency may increase susceptibility to oxygen toxicity.

Airway obstruction during high oxygen tension may cause alveolar collapse following absorption of the oxygen. Similarly, occlusion of the eustachians tubes may cause retraction of the eardrum and obstruction of the paranasal sinuses may produce vacuum-type headache.

12. Ecological Information

No adverse ecological effects expected. This product does not contain any Class I or Class II ozone-depleting chemicals. The components of this mixture are not listed as marine pollutants by TDG Regulations.

13. Disposal Considerations

WASTE DISPOSAL METHOD: Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier.

14. Transport Information

TDG/IMO SHIPPING NAME: Oxygen, Compressed

HAZARD CLASS: CLASS 2.2(5.1): Non-flammable, non-corrosive, non-toxic and oxidizing material

IDENTIFICATION #: UN1072

PRODUCT REPORTABLE QUANTITY (PRQ):
Any accidental release in a quantity that could pose a danger to public safety or any sustained release of 10 minutes or more.

SHIPPING LABEL(s): Special Oxidizer with Class 2 at bottom.

LACARD (When Required): Special Oxidizer with Class 2 at bottom.

SPECIAL SHIPPING INFORMATION:

Cylinders should be transported in a secure position, in a well-ventilated vehicle. Cylinders transported in an enclosed, non-ventilated compartment of a vehicle can present serious safety hazards.

15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, provincial, and local regulations. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS (Canada): CLASS A: Compressed gas.
CLASS C: Oxidizing material.

This product is on the DSL list.

International Regulations:

EINECS: Not available.

DSCL (EEC): R8- Contact with combustible material may cause fire.

International Lists: No products were found.

16. Other Information

MIXTURES:

When two or more gases, or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist, or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

HAZARD RATING SYSTEM:

HMIS RATINGS:

HEALTH 0

FLAMMABILITY 0

PHYSICAL HAZARD 3

STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:

THREADED: 0-3000 psig CGA-540
3001-4000 CGA-577
4001-5500 CGA-701

PIN-INDEXED YOKE: CGA-870

ULTRA-HIGH-INTEGRITY CONNECTION: CGA-714

Use the proper CGA connections. **DO NOT USE ADAPTERS.** Additional limited-standard connections may apply. See CGA pamphlets V-1 and V-7 listed below.

Ask your supplier about free Praxair safety literature as referred to in this MSDS and on the label for this product. Further information about this product can be found in the following pamphlets published by the Compressed Gas Association, Inc. (CGA), 4221 Walney Road, 5th Floor, Chantilly, VA 20151-2923, Telephone (703) 788-2700, Fax (703) 961-1831, website: www.cganet.com.

- AV-1 Safe Handling and Storage of Compressed Gases
- AV-8 Characteristics and Safe Handling of Cryogenic Liquid and Gaseous Oxygen
- G-4 Oxygen
- G-4.1 Cleaning Equipment for Oxygen Service
- G-4.3 Commodity Specification for Oxygen
- P-1 Safe Handling of Compressed Gases in Containers
- P-2 Characteristics and Safe Handling of Medical Gases
- P-14 Accident Prevention in Oxygen-Rich, Oxygen-Deficient Atmospheres
- SB-8 Use of Oxy-Fuel Gas Welding and Cutting Apparatus
- V-1 Compressed Gas Cylinder Valve Inlet and Outlet Connections
- Handbook of Compressed Gases, Fifth Edition

Praxair asks users of this product to study this MSDS and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this MSDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

PREPARATION INFORMATION:

DATE: October 15, 2013

DEPARTMENT: Safety and Environmental Services

TELEPHONE: 905-803-1600

The opinions expressed herein are those of qualified experts within Praxair Canada Inc. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of use of the product are not within the control of Praxair Canada Inc., it is the user's obligation to determine the conditions of safe use of the product.

Praxair Canada Inc. requests the users of this product to study this Material Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

*Praxair and the Flowing Airstream design are trademarks
of Praxair Canada Inc.*

Other trademarks used herein are trademarks or registered trademarks of their respective owners.



Praxair Canada Inc.
1 City Centre Drive
Suite 1200
Mississauga, ON L5B 1M2

MATERIAL SAFETY DATA SHEET

Page 1 of 4

Updated December 17, 2010

OPTISORB ABSORBENT**1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION****Product Name:** OPTISORB**Product use:** Absorbent**Product Advantages:** OPTISORB is highly absorbent and nonflammable. It absorbs liquids, including most oils, water, mixtures of soluble oils and water, grease, gas, acids, inks and paints.

Company Identification: Moltan Company.
 7125 Riverdale Bend Road
 Memphis, Tennessee
 800.264.5826 or 901-755-5666 (For Product Information)
 901.757.0546 fax
www.moltan.com

2. COMPOSITION / INFORMATION ON INGREDIENTS:

<u>Chemical Name</u>	<u>Percent</u>	<u>CAS Number</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>
Diatomaceous Earth	>99%	61760-53-2	Not Listed	Not Listed
Crystalline Silica (Quartz)	<1%	14808-60-7	0.1 mg/m ³	5 mg/m ³ /%SiO ₂ +2
Crystalline Silica (Cristobalite)	<1%	14464-46-1	0.05 mg/m ³	5 mg/m ³ /%SiO ₂ +2

Note: This product contains decomposed organic matter. The crystalline silica (quartz) content naturally varies depending on the composition of the soil. These materials are mined from the earth. Trace amounts of naturally occurring elements might be detected during chemical analysis of these materials.

California Prop 65: This product does contain ingredients, which are known to the state of California to cause cancer, birth defects, or other reproductive harm. Crystalline Silica (Quartz) CAS# 14808-60-7 and Crystalline Silica (Cristobalite) CAS# 14464-46-1

HAZARDS DISCLOSURE: This product contains known hazardous materials as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200. As defined under Sara 311 and 312, this product contains known hazardous materials.

3. HAZARDS IDENTIFICATION**EMERGENCY OVERVIEW:**

Warning! Product dust may cause eye, skin and respiratory irritation. This product contains crystalline silica, which is known to cause cancer, birth defects, or other reproductive harm to humans when exposed to levels above permissible levels.

NFPA Rating: Health - 1, Flammability - 0, Reactivity - 0
 NFPA Definitions: (0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme).

Potential Health Effects:

Inhalation: This product may represent an inhalation hazard with creation of respirable dust.

Ingestion: Small quantities this product does not represent an ingestion hazard. Large quantities can cause intestinal distress.

Skin Contact: Dust maybe irritating to skin, abrasions and dry skin.

MATERIAL SAFETY DATA SHEET



Eye Contact: Dust may cause irritation or inflammation.

Chronic Exposure: Risk of injury depends on duration and level of exposure. Prolonged or repeated inhalation of respirable crystalline silica at or above allowable occupational exposure limits may lead to the development of silicosis.

Aggravation of Pre-existing Conditions: Pre-existing skin and respiratory problems.

Carcinogenicity: Crystalline Silica is listed by the NTP, IARC, or regulated by OSHA as a carcinogen.

4. FIRST AID MEASURES

Inhalation: Remove to fresh air if exposed to large amounts of dust. Seek medical attention for discomfort or if coughing or other symptoms do not subside.

Ingestion: Do not induce vomiting. Seek medical attention or contact poison control center immediately.

Skin Contact: Wash thoroughly with soap and water. Seek medical attention for rash or irritation.

Eye Contact: Immediately flush eyes with large amounts of water for at least 15 minutes. Seek medical attention if irritation or blurred vision occurs.

5. FIRE FIGHTING MEASURES

Flash Point (PMCC): Not Flammable

Auto-ignition temperature: Not Applicable

Flammable limits in air % by volume: LEL: Not Applicable UEL: Not Applicable

Explosion: N/A

Fire Extinguishing Media: Use any means suitable for extinguishing surrounding fire.

Special Fire Fighting Procedures: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

6. ACCIDENTAL RELEASE MEASURES

If uncontaminated, product can be reused. Avoid actions that cause dusts to become airborne. Avoid inhalation of dust. Do not wash product down sewage and drainage systems or into bodies of water.

7. HANDLING AND STORAGE

Storage Temperature (min/max): NA

Shelf Life: N/A

HANDLING (PERSONNEL): Handle in accordance with good hygiene and safety procedures.

STORAGE PRECAUTIONS: Store product separately from feed, food, pesticides and fertilizers so that cross contamination does not occur. Heat may be generated from a stockpile of product due to natural decomposition of organic materials.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Airborne Exposure Limits:

Airborne Exposure Limits Diatomaceous Earth Dust

Respirable Fraction OSHA PEL ACGIH TLV

Total Dust 3 mg/m³ 5 mg/m³

Airborne Exposure Limits Crystalline Silica (Quartz) Dust 15 mg/m³ 10 mg/m³

Respirable Fraction OSHA PEL ACGIH TLV

Respirable Fraction 5 mg/m³/%SiO₂+2 0.1 mg/m³

Airborne Exposure Limits: Crystalline Silica (Cristoballite) Dust

Respirable Fraction OSHA PEL ACGIH TLV

Respirable Fraction 5 mg/m³/%SiO₂+2 0.05 mg/m³

MATERIAL SAFETY DATA SHEET



Ventilation System: Always work in a well ventilated area.
Personal Respirators (NIOSH Approved): None required if dust is below permissible exposure levels.
Skin Protection: Observe good industrial hygiene practices.
Eye Protection: Always wear safety glasses when working with this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

FORM: Solid (Granular)	COLOR: Tan to white
ODOR: Odorless	SPECIFIC GRAVITY: 2.22
SOLUBILITY IN WATER: <2.0%	MELTING/FREEZING POINT: N/A
BOILING POINT: N/A	EVAPORATION RATE (BuAc=1): N/A
VISCOSITY: N/A	AUTOIGNITION TEMPERATURE: N/A
VAPOR DENSITY (Air=1): N/A	VAPOR PRESSURE (mm Hg): N/A
VOLATILE ORGANIC COMPOUNDS (VOC #/gal): N/A	

10. STABILITY AND REACTIVITY

Stability: Stable under ordinary conditions of use and storage.
Hazardous Decomposition Products: None
Hazardous Polymerization: Will not occur.
Incompatibilities: Hydrofluoric acid may generate heat upon mixing with this product.
Conditions to Avoid: Incompatible materials.

11. TOXICOLOGICAL INFORMATION

Toxicity Data:

This product contains sand, clay, and decomposed organic matter. The crystalline silica content naturally varies.

<u>Cancer Lists</u> <u>Ingredient</u>	---NTP Carcinogen---		<u>IARC Category</u>
	<u>Known</u>	<u>Anticipated</u>	
Crystalline Silica (Quartz)	YES	YES	Group 1
Crystalline Silica (Cristobalite)	YES	YES	Group 1

12. ECOLOGICAL INFORMATION

Environmental Fate: No Data Available

Environmental Toxicity: No Data Available

13. DISPOSAL CONSIDERATIONS

Dispose of all materials in accordance with federal, state and local requirements.

14. TRANSPORTATION INFORMATION

Domestic (Land, D.O.T.) International (Water, I.M.O. & Air, I.C.A.O.)
SHIPPING NAME: Non-Regulated Material
PRODUCT LABEL: NA **UN NUMBER:** N/A

15. REGULATORY INFORMATION

MATERIAL SAFETY DATA SHEET



Page 4 of 4

Updated December 17, 2010

Federal, State & International Regulations

Ingredient	<u>SARA 302</u>		<u>List</u>	<u>-SARA 313-</u>	<u>CERCLA</u>	<u>RCRA</u>	<u>TSCA</u>
	<u>RQ</u>	<u>TPQ</u>		<u>Chemical Catalog</u>			
Diatomaceous Earth	NO	NO	NO	NO	NO	NO	NO
Crystalline Silica (Quartz)	NO	NO	NO	NO	NO	NO	NO
Crystalline Silica (Cristobalite)	NO	NO	NO	NO	NO	NO	NO

Chemical Weapons Convention: No **TSCA 12(b):** No **CDTA:** No

SARA 311/312: Acute: YES; Chronic: YES; Fire: NO; Pressure: NO; Reactivity: NO (Mixture / Liquid)

California Prop 65:

WARNING! This product does contain ingredients, which are known to the state of California to cause cancer, birth defects, or other reproductive harm. Crystalline Silica (Quartz) CAS# 14808-60-7 and Crystalline Silica (Cristobalite) CAS# 14464-46-1

Canada:

WHMIS: This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

Soil may be subject to WHIMS depending on the intended use and workers exposure. Product containing crystalline Silica is classified as D2A and is subject to WHIMS requirements.

This material or all of its components are listed on the Inventory of Existing Chemical Substances under the Toxic Substance Control Act (TSCA). This material or all of its components are listed on the Canadian Domestic Substances List (DSL). This material or all of its components are listed (or considered as having been notified) on the European Inventory of Existing Chemical Substances (EINECS). Other inventory lists: ENCS (Japan), Korea, Australia, China (Draft), PICCS (Philippines), Japan (ENCS).

16. OTHER INFORMATION

Prepared By: Paul Eigbrett; MSDS Authoring PLUS
Supersedes Date: December 15, 2009

Approval Date: October 06, 2010

This Material Safety Data Sheet (MSDS) has been reviewed to fully comply with the guidance contained in the ANSI MSDS standard (ANSI Z400.1-2004).

This information is furnished gratuitously and independent of the sales of the product without warranty, expressed or implied, except that it is accurate to the best knowledge of the Moltan Company. NO WARRANTY, EITHER EXPRESS OR IMPLIED, WHETHER OF MERCHANTABILITY OF FITNESS OF ANY NATURE OR OTHERWISE WITH RESPECT TO THE PRODUCT OR TO THE DATA HEREIN IS MADE HEREUNDER. The data in this Material Safety Data Sheet relates only to the specific material designated herein. It does not relate to use in combination with any other material or in any process.

NONE.



ODOURIZED Natural Gas Material Safety Data Sheet

Cette information existe également en français.

Health Hazard	1
Flammability	4
Reactivity	0

SECTION I: PRODUCT INFORMATION

Supplier MANITOBA HYDRO 360 Portage Avenue Winnipeg, Manitoba Canada R3C 0G8	WHMIS Classification Class A—Compressed Gas Class B—Div. 1 - Flammable Compressed Gas	Chemical Family Alkane Simple Hydrocarbons	TDG: Shipping Name Natural Gas, compressed (with high methane content)
Emergency Telephone Numbers (204) 480-5900 (in Winnipeg) 1-888-624-9376 (outside Winnipeg)	Trade Name Odourized Natural Gas	Molecular Family CH ₄ (Methane)	UN/PIN: 1971
	Chemical Name Methane	Product Use Natural Gas is used primarily as a heating fuel for domestic and industrial purposes.	Class: 2.1
	Synonyms Natural Gas/Methane	Method of Transport Pipeline (under pressure)	

SECTION II: HAZARDOUS COMPONENTS

COMPONENT	CONCENTRATION %	GAS	PIN	LD ₅₀ / LC ₅₀ SPECIES AND ROUTE	EXPOSURE LIMIT
Methane	> 95.0%	74-82-8	UN 1971	Cat (Inhalation) = 900,000 ppm (90% in air)	Simple Asphyxiant
Ethane	< 2.0%	74-84-0	UN 1035	N. Av.	Simple Asphyxiant
Nitrogen	< 2.0%	7727-37-9	UN 1066	N. Av.	Simple Asphyxiant
Other Hydrocarbons	< 0.5%			N. Av.	N. Av.

SECTION III: PHYSICAL DATA

Appearance and Odour Colourless; skunky odour.	Freezing Point (as Methane) -183°C	Molecular Weight (Methane) 16.04	Vapor Density in Air (gaseous specific gravity) 0.53 to 0.7 (as Methane)
Odour Threshold Reported to be about 200 ppm of odourous natural gas.	Vapor Pressure 300–600 psig (in pipeline)	pH Value Not Applicable.	Solubility in Water (as Methane) 0.0022% (Slight)
Boiling Point (as Methane) -162°C	Specific Gravity Not Applicable.	Percent Volatile (by volume) 100%	

SECTION IV: FIRE AND EXPLOSION HAZARD DATA

Flammability In presence of air/oxygen.	Special Fire Fighting Procedures Control release by limiting or shutting off source utilizing pipeline/control valves. Evacuate area. Keep upwind of fire.
Flammability Range (% by volume) 5.0% lower – 15.4% upper	Unusual Fire and Explosion Hazards Could be potentially hazardous if uncontrolled in a confined space. NOTE: Natural gas is lighter than air and will dissipate to atmosphere. A hazard from re-ignition or explosion exists if the flame is extinguished without stopping flow of natural gas and/or cooling surroundings and eliminating ignition source. (Use water spray to cool surroundings and exposures.)
Flashpoint -188°C TCC	
Fire Extinguishing Media Dry chemical, carbon dioxide (CO ₂), foam, water fog or Halon.	
Auto Ignition Temperature 537°C	

SECTION V: HEALTH HAZARD DATA**Effects of Short Term (Acute) Exposure****Inhalation**

At high concentrations natural gas acts as an asphyxiant by displacing oxygen in the air.

Displacement of air by natural gas may lead to shortness of breath, unconsciousness and death from lack of oxygen. Incomplete combustion may produce carbon monoxide.

Methane may cause narcosis above 300,000 ppm (30% in air).

Eye Contact

Natural gas does not irritate the eyes.

Skin Contact

Natural gas is not a skin irritant, may cause frostbite on skin contact.

Ingestion

Not applicable.

Effects of Long Term (Chronic) Exposure**Carcinogenicity**

No specific data.

Reproduction

No specific data.

Mutagenicity

No specific data.

SECTION VI: REACTIVITY DATA**Stability**

Natural gas/methane is stable.

Conditions to Avoid

Uncontrolled explosive mixtures, open flame, spark source and static discharge.

Natural gas readily mixes with air when released and creates a combustible atmosphere (particularly in confined areas).

Incompatibility

Strong oxidizing agents (e.g. peroxides, perchlorates) as well as halogen compounds (e.g. chlorine) can increase the risk of fire and explosion.

Hazardous Polymerization

Will not occur.

Hazardous Decomposition Products

Oxides of carbon and trace amounts of oxides of sulphur and nitrogen (SO_x and NO_x).

SECTION VII: FIRST AID MEASURES**Inhalation**

Move victim(s) into fresh air. Restore and/or support breathing as necessary. Oxygen may be beneficial. Obtain medical assistance. If heart has stopped, perform C.P.R.

SECTION VIII: SPILL OR LEAK PROCEDURES**Steps to be Taken in Case Gas Leak/Line Break Occurs**

Shut off source of natural gas supply, evacuate area, eliminate ignition sources, ventilate closed spaces.

Minor leaks can be detected with a soap solution applied at suspected leak points.

Emergency Telephone Numbers

(204) 480-5900 (in Winnipeg)

1-888-624-9376 (outside Winnipeg)

NEVER USE AN OPEN FLAME TO DETECT LEAKS.

SECTION IX: PREVENTATIVE MEASURES**Engineering Controls**

May be required to reduce hazardous exposures, e.g. explosion proof mechanical ventilation and lighting, process or personal enclosure, control of process conditions and process modification.

Handling and Storing Precautions

Avoid personal body contact (skin/eye contact, etc.) with high pressure natural gas. Avoid all possible sources of accidental ignition, e.g. static electricity, mechanical impact and other explosive sources. **Do not operate electrical switches.**

Respiratory Protection (specify type)**DO NOT USE AIR PURIFYING RESPIRATORS.**

Positive pressure, self contained breathing apparatus for emergency use. Adequate ventilation required. Adequate venting of possible combustion products required.

Other Protective Equipment

CSA/ASA Safety Equipment must be available/worn as required to protect ears, eyes, feet, hands, head and remaining body area.

SECTION X: PREPARATION INFORMATION**Prepared By**

Tammis R. Stathers, CRSP
Workplace Environment Department,
Manitoba Hydro
(204) 360-3628

Preparation Date

March 1, 2014

1. Identification of the substance/preparation and of the company/undertaking

Product name: MS T&T Cleaner

Product use: Cleaning product
Product is for professional use only

Relevant identified uses of the substance or mixture and uses advised against

Identified uses

Car wash product. Semi-Automatic proces

Uses advised against

None known.

Company/undertaking identification: Schippers Europe B.V.
Rond Deel 12
5531 AH Bladel, The Netherlands
Tél.: 0031 (0) 497-382017
Fax: 0031 (0) 497-382096
contact.nl@schippers.eu

Emergency telephone number
National advisory body/Poison Centre
Telephone number :

0870 600 6266 (This service is only available to health professionals)

2. Hazards identification

Classification of the substance or mixture

Product definition : Mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Flam. Liq. 3, H226

Met. Corr. 1, H290

Skin Corr. 1A, H314

The classification of this product is based only on its extreme pH value (in accordance with current European legislation)

Classification according to Directive 1999/45/EC [DPD]

Classification : C; R35

The classification of this product is based only on its extreme pH value (in accordance with current European legislation)

Human health hazards

Causes severe burns.

See Section 16 for the full text of the R phrases or H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Hazard pictograms



Signal word

Danger

Contains

ethylenediamine tetracetate

Ethanolamines

Anionic surfactants

Potassium Hydroxide

Sodium hydroxide

Hazard statements

H226 Flammable liquid and vapour.

H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.

Precautionary statements

Prevention

P210 - Keep away from heat, sparks, open flames and hot surfaces. - No smoking.

Response

P280 - Wear protective gloves and eye/face protection.
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 - Immediately call a POISON CENTER or doctor/physician.

2.3 Other hazards

Other hazards which do not result in classification

Not applicable.

3. Composition/information on ingredients

Product/ingredient name	Identifiers	%	Classification		Type
			67/548/EEC	Regulation (EC) No. 1272/2008 [CLP]	
ethylenediamine tetraacetate	REACH #: 01-2119486762-27 EC: 200-573-9 CAS: 64-02-8 Index: 607-428-00-2	10-20	Xn; R20/22 Xi; R41	Acute Tox. 4, H302 Acute Tox. 4, H332 Eye Dam. 1, H318	[1]
Propan-2-ol	REACH #: 01-2119457558-25 EC: 200-661-7 CAS: 67-63-0 Index: 603-117-00-0	5-10	F; R11 Xi; R36 R67	Flam. Liq. 2, H225 Eye Irrit. 2, H319 STOT SE 3, H336	[1][2]
Ethanolamines	REACH #: 01-2119486455-28 EC: 205-483-3 CAS: 141-43-5 Index: 603-030-00-8	3-5	Xn; R20/21/22 C; R34	Acute Tox. 4, H302 Acute Tox. 4, H312 Acute Tox. 4, H332 Skin Corr. 1B, H314 STOT SE 3, H335 Eye Irrit. 2, H319	[1][2]
Ethanolamines	REACH #: 01-2119486482-31 EC: 203-049-8 CAS: 102-71-6	1-5	Not classified.	Eye Irrit. 2, H319	[1]
Anionic surfactants	EC: 271-532-0	1-5	Xi; R36/38	Skin Irrit. 2, H315	[1]
Potassium Hydroxide	CAS: 68584-25-8 REACH #: 01-2119487136-33 EC: 215-181-3 CAS: 1310-58-3 Index: 019-002-00-8	1-2	Xn; R22 C; R35	Eye Irrit. 2, H319 Acute Tox. 4, H302 Skin Corr. 1A, H314	[1][2]
Sodium hydroxide	REACH #: 01-2119457892-27 EC: 215-185-5 CAS: 1310-73-2 Index: 011-002-00-6	0.5-2	C; R35 See Section 16 for the full text of the R-phrases declared above.	Skin Corr. 1A, H314 See Section 16 for the full text of the H-statements declared above.	[1][2]

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Type

- [1] Substance classified with a health or environmental hazard
 - [2] Substance with a workplace exposure limit
 - [3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
 - [4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII
- Occupational exposure limits, if available, are listed in Section 8.

4. First aid measures

Description of first aid measures

Eye contact :

Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 minutes. Chemical burns must be treated promptly by a physician. Get medical attention immediately. Call a poison center or physician.

Inhalation :

Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. Get medical attention immediately. Call a poison center or physician.

Skin contact :

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 15 minutes. Chemical burns must be treated promptly by a physician. Wash contaminated clothing before reusing. Clean shoes thoroughly before reuse. Get medical attention immediately. Call a poison center or physician.

Ingestion :

Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention immediately. Call a poison center or physician.

Protection of first-aiders :

No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

Most important symptoms and effects, both acute and delayed

Potential acute health effects

Eye contact :

Causes serious eye damage.

Inhalation :

May give off gas, vapour or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact :

Causes severe burns.

Ingestion :

May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact :

adverse symptoms may include the following:

pain
watering
redness

Inhalation :

Adverse symptoms may include the following:

respiratory tract irritation
coughing

Skin contact :

Adverse symptoms may include the following:

pain or irritation
redness
blistering may occur

Ingestion :

Adverse symptoms may include the following:

stomach pains

Indication of any immediate medical attention and special treatment needed

Notes to physician :

In case of inhalation of decomposition products in a fire, symptoms may be delayed.

Specific treatments :

No specific treatment.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media:

Use dry chemical, CO₂, water spray (fog) or foam.

Unsuitable extinguishing media:

Do not use water jet.

Special hazards arising from the substance or mixture

Hazards from the substance or mixture:

Flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard.

Hazardous combustion products:

Decomposition products may include the following materials:

carbon dioxide
carbon monoxide
nitrogen oxides
sulfur oxides
metal oxide/oxides

Advice for firefighters

Special precautions for fire-fighters:

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water

spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters:

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel:

No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Try to avoid touching or walking through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

for emergency responders

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions:

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill:

Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment.

Large spill :

Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Use spark-proof tools and explosion-proof equipment. Contaminated absorbent material may pose the same hazard as the spilt product.

Reference to other sections:

See Section 1 for emergency contact information.

See Section 8 for information on appropriate personal protective equipment.

See Section 13 for additional waste treatment information.

7. Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

Precautions for safe handling

Protective measures :

Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows.

Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Use spark-proof tools and explosion-proof equipment. Contaminated absorbent material may pose the same hazard as the spilt product. acids. Spillages should be cleaned up promptly to avoid damage to surrounding materials.

Advice on general occupational hygiene:

Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities:

Store between the following temperatures: 5 to 45°C (41 to 113°F). Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Store in corrosive resistant container with a resistant inner liner. Eliminate all ignition sources. Separate from acids. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Specific end use(s)

Recommendations :

Not applicable. until Exposure Scenarios for substances become available.

Industrial sector specific solutions:

Not applicable. until Exposure Scenarios for substances become available.

8. Exposure controls/Personal protection

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
Propan-2-ol	EH40/2005 WELs (United Kingdom (UK), 8/2007). STEL: 1250 mg/m ³ 15 minute(s). STEL: 500 ppm 15 minute(s). TWA: 999 mg/m ³ 8 hour(s). TWA: 400 ppm 8 hour(s).
Ethanolamines	EH40/2005 WELs (United Kingdom (UK), 8/2007). Absorbed through skin. STEL: 7.6 mg/m ³ 15 minute(s). STEL: 3 ppm 15 minute(s). TWA: 2.5 mg/m ³ 8 hour(s). TWA: 1 ppm 8 hour(s).
Potassium Hydroxide	EH40/2005 WELs (United Kingdom (UK), 8/2007). STEL: 2 mg/m ³ 15 minute(s).
Sodium hydroxide	EH40/2005 WELs (United Kingdom (UK), 8/2007). STEL: 2 mg/m ³ 15 minute(s).

Derived effect levels

No DELs available.

Predicted effect concentrations

No PECs available

Exposure controls

Appropriate engineering controls:

Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures :

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection (EN 166):

Highly recommended : Goggles, face shield, or other full-face protection.

Skin protection

Hand protection (EN 374):

Highly recommended : Gloves - butyl rubber , nitrile rubber (Breakthrough time: 1 - 4 hours) .

Body protection (EN 14605):

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection :

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection (EN 143, 14387):

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Thermal hazards

Not applicable.

Environmental exposure controls:

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance

Physical state :

Liquid.

Colour :

Yellow [Light]

Odour :

chlorine

Odour threshold :

Not applicable and/or not determined for the mixture.

pH :

13.6 to 14 [Conc. (% w/w): 100%]

Melting point/freezing point :

Not applicable and/or not determined for the mixture.

Initial boiling point and boiling range:

Not applicable and/or not determined for the mixture.

Flash point :	> 100°C
Evaporation rate :	Not applicable and/or not determined for the mixture.
Flammability (solid, gas) :	Not applicable and/or not determined for the mixture.
Burning time :	Not applicable and/or not determined for the mixture.
Burning rate :	Not applicable and/or not determined for the mixture.
Upper/lower flammability or explosive limits:	Not applicable and/or not determined for the mixture.
Vapour pressure :	Not applicable and/or not determined for the mixture.
Vapour density :	Not applicable and/or not determined for the mixture.
Relative density :	1.14 to 1.18
Solubility(ies) :	Easily soluble in the following materials: cold water and hot water.
Partition coefficient: noctanol/water:	Not applicable and/or not determined for the mixture.
Auto-ignition temperature :	Not applicable and/or not determined for the mixture.
Decomposition temperature :	Not applicable and/or not determined for the mixture.
Viscosity :	Not applicable and/or not determined for the mixture.
Explosive properties :	Not applicable.
Oxidising properties :	Yes.

Other information

No additional information.

10. Stability and reactivity

Reactivity :

No specific test data related to reactivity available for this product or its ingredients.

Chemical stability :

The product is stable.

Possibility of hazardous reactions:

Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid :

Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

Incompatible materials :

Extremely reactive or incompatible with the following materials: acids.

Hazardous decomposition products:

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
ethylenediamine tetraacetate	LD50 Oral	Rat	1700 mg/kg	-
Propan-2-ol	LC50 Inhalation Vapour	Rat	30 mg/l	4 hours
	LD50 Dermal	Rabbit	12870 mg/kg	-
	LD50 Oral	Rat	4710 mg/kg	-
Ethanolamines	LD50 Dermal	Rabbit	1025 mg/kg	-
	LD50 Oral	Rat	1089 mg/kg	-
Ethanolamines	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	6400 mg/kg	-

Conclusion/Summary :

No known significant effects or critical hazards.

Acute toxicity estimates

Route	ATE value
Oral	5642.7 mg/kg
Dermal	20707.1 mg/kg
Inhalation (gases)	23684.2 ppm
Inhalation (vapours)	45.93 mg/l
Inhalation (dusts and mists)	7.895 mg/l

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Ethanolamines	Eyes - Mild irritant	Rabbit	-	10 milligrams	-
	Eyes - Severe irritant	Rabbit	-	20 milligrams	-
	Skin - Mild irritant	Human	-	72 hours 15 milligrams Intermittent	-
	Skin - Severe irritant	Mouse	-	50 Percent	-
Skin - Mild irritant	Rabbit	-	24 hours 560 milligrams	-	

Conclusion/Summary :

Not determined for the mixture.

Sensitiser

Conclusion/Summary :

Not determined for the mixture.

Mutagenicity

Conclusion/Summary :

Not determined for the mixture.

Carcinogenicity

Conclusion/Summary :

Not determined for the mixture.

Reproductive toxicity

Conclusion/Summary :

Not determined for the mixture.

Teratogenicity

Conclusion/Summary :

Not determined for the mixture.

Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
Propan-2-ol Ethanolamines	Category 3 Category 3	Not determined Not determined	Narcotic effects Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

No known significant effects or critical hazards.

Aspiration hazard

No known significant effects or critical hazards.

Information on the likely routes of exposure:

Not determined for the mixture.

Potential acute health effects

Inhalation :

May give off gas, vapour or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Ingestion :

May cause burns to mouth, throat and stomach.

Skin contact :

Causes severe burns.

Eye contact :

Causes serious eye damage.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation :

No specific data.

Ingestion :

Adverse symptoms may include the following:
stomach pains

Skin contact :

Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Eye contact :

Adverse symptoms may include the following:
pain
watering
redness

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects:

No known significant effects or critical hazards.

Potential delayed effects :

No known significant effects or critical hazards.

Long term exposure

Potential immediate effects:

No known significant effects or critical hazards.

Potential delayed effects :

No known significant effects or critical hazards.

Potential chronic health effects

Conclusion/Summary :

No known significant effects or critical hazards.

General :

No known significant effects or critical hazards.

Carcinogenicity :

No known significant effects or critical hazards.

Mutagenicity :

No known significant effects or critical hazards.

Teratogenicity :

No known significant effects or critical hazards.

Developmental effects :

No known significant effects or critical hazards.

Fertility effects :

No known significant effects or critical hazards.

Other information :

Not determined for the mixture.

12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
ethylenediamine tetraacetate	Acute LC50 121 mg/l	Fish	96 hours
Propan-2-ol	Acute LC50 9640 mg/l	Fish	96 hours
Ethanolamines	Acute LC50 >100 mg/l	Fish	96 hours
Ethanolamines	Acute LC50 11800 mg/l	Fish	96 hours
Potassium Hydroxide	Acute LC50 80 mg/l	Fish	96 hours
Sodium hydroxide	Acute EC50 40 mg/l	Daphnia	48 hours

Conclusion/Summary :

The surfactants contained in the product are biodegradable according to the requirements of the detergent regulation 648/2004/EC

Persistence and degradability

Conclusion/Summary :

The surfactants contained in the product are biodegradable according to the requirements of the detergent regulation 648/2004/EC

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
ethylenediamine tetraacetate	5.01	-	high
Propan-2-ol	0.05	-	low
Ethanolamines	-1.31	-	low
Ethanolamines	-1	3.890451449	low

Conclusion/Summary :

Not determined for the mixture.

Mobility in soil

Soil/water partition coefficient (KOC):
Not determined for the mixture.

Mobility :
Not determined for the mixture.

Results of PBT and vPvB assessment
PBT : Not applicable.
vPvB : Not applicable.

Other adverse effects :
No known significant effects or critical hazards.

13. Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

Waste treatment methods

Product

Methods of disposal :

The generation of waste should be avoided or minimised wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Hazardous waste :
Yes.

European waste catalogue (EWC)

Waste code	Waste designation
20 01 29*	detergents containing dangerous substances

Packaging


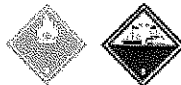


Methods of disposal :

The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled.

Special precautions :

This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

14. Transport information

	ADR/RID	ADN/ADNR	IMDG	IATA
14.1 UN number	UN2924	UN2924	UN2924	UN2924
14.2 UN proper shipping name	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Potassium hydroxide, Isopropanol)	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Potassium hydroxide, Isopropanol)	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Potassium hydroxide, Isopropanol)	Flammable liquid, corrosive, n.o.s. (Potassium hydroxide, Isopropanol)
14.3 Transport hazard class(es)	3 (8) 	3 (8) 	3 (8) 	3 (8) 
14.4 Packing group	III	III	III	III
14.5 Environmental hazards	No.	No.	No.	No.
14.6 Special precautions for user	None.	None.	None.	None.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:
 Not applicable.

15. Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Substances of very high concern

None of the components are listed.

Annex XVII – Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles:

Not applicable.

Other EU regulations Ingredient declaration according to detergent regulation 648/2004/EC:

Ingredient declaration according to detergent regulation 648/2004/EC:

≥15 - <30% EDTA
 ≥5 - <15% soap
 <5% anionic surfactants

National regulations

United Kingdom (UK)

The Chemicals (Hazard Information and Packaging for Supply) Regulations.

The Control of Substances Hazardous to Health Regulations.

Health and Safety at Work Act.

Chemical Safety Assessment:

This product contains substances for which Chemical Safety Assessments are still

required.

16. Other information

Abbreviations and acronyms:

ADN/ADNR =	European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
ADR =	The European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE =	Acute Toxicity Estimate
BCF =	Bioconcentration Factor
CLP =	Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
DNEL =	Derived No Effect Level
DPD =	Dangerous Preparations Directive [1999/45/EC]
EC =	European Commission
EUH statement =	CLP-specific Hazard statement
IATA =	International Air Transport Association
IBC =	Intermediate Bulk Container
IMDG =	International Maritime Dangerous Goods
LogPow =	logarithm of the octanol/water partition coefficient
MARPOL 73/78 =	International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
OEL =	Occupational Exposure Limit
PBT =	Persistent, Bioaccumulative and Toxic
PNEC =	Predicted No Effect Concentration
REACH =	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation [Regulation (EC) No. 1907/2006]
RID =	The Regulations concerning the International Carriage of Dangerous Goods by Rail
REACH # =	REACH Registration Number
vPvB =	Very Persistent and Very Bioaccumulative

Full text of abbreviated H statements:

Classification	Justification
Flam. Liq. 3, H226	On basis of test data
Met. Corr. 1, H290	On basis of test data
Skin Corr. 1A, H314	On basis of test data

Full text of classifications [CLP/GHS]:

H225	Highly flammable liquid and vapour.
H226	Flammable liquid and vapour.
H290	May be corrosive to metals.
H302	Harmful if swallowed.
H312	Harmful in contact with skin.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.

Full text of abbreviated R phrases:

Acute Tox. 4, H302
 Acute Tox. 4, H312
 Acute Tox. 4, H332
 Eye Dam. 1, H318
 Eye Irrit. 2, H319
 Flam. Liq. 2, H225
 Flam. Liq. 3, H226
 Met. Corr. 1, H290
 Skin Corr. 1A, H314
 Skin Corr. 1B, H314
 Skin Irrit. 2, H315
 STOT SE 3, H335

STOT SE 3, H336

ACUTE TOXICITY: ORAL - Category 4
 ACUTE TOXICITY: SKIN - Category 4
 ACUTE TOXICITY: INHALATION - Category 4
 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
 FLAMMABLE LIQUIDS - Category 2
 FLAMMABLE LIQUIDS - Category 3
 CORROSIVE TO METALS - Category 1
 SKIN CORROSION/IRRITATION - Category 1A
 SKIN CORROSION/IRRITATION - Category 1B
 SKIN CORROSION/IRRITATION - Category 2
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Respiratory tract irritation] - Category 3
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Narcotic effects] - Category 3

Full text of classifications [DSD/DPD]:

R11- Highly flammable.
 R22- Harmful if swallowed.
 R20/22- Harmful by inhalation and if swallowed.
 R20/21/22- Harmful by inhalation, in contact with skin and if swallowed.
 R34- Causes burns.
 R35- Causes severe burns.
 R41- Risk of serious damage to eyes.
 R36- Irritating to eyes.
 R36/38- Irritating to eyes and skin.
 R67- Vapours may cause drowsiness and dizziness.

Full text of classifications [DSD/DPD]

F - Highly flammable
 C - Corrosive
 Xn - Harmful
 Xi - Irritant

Notice to reader

The above information is believed to be correct with respect to the formula used to manufacture the product in the country of origin. As data, standards, and regulations change, and conditions of use and handling are beyond our control, NO WARRANTY, EXPRESS OR IMPLIED, IS MADE AS TO THE COMPLETENESS OR CONTINUING ACCURACY OF THIS INFORMATION.



Revision Number: 002.0

Issue date: 05/07/2014

1. PRODUCT AND COMPANY IDENTIFICATION

Product name:	LOCTITE 638 RETAIN CMPND 50ML	IDH number:	1835936
Product type:	Anaerobic Adhesive	Item number:	1835936
Restriction of Use:	None identified	Region:	United States
Company address:	Contact information:		
Henkel Corporation	Telephone: (860) 571-5100		
One Henkel Way	MEDICAL EMERGENCY Phone: Poison Control Center		
Rocky Hill, Connecticut 06067	1-877-671-4608 (toll free) or 1-303-592-1711		
	TRANSPORT EMERGENCY Phone: CHEMTREC		
	1-800-424-9300 (toll free) or 1-703-527-3887		
	Internet: www.henkelna.com		

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER: CAUSES SKIN IRRITATION.
MAY CAUSE AN ALLERGIC SKIN REACTION.
CAUSES SERIOUS EYE DAMAGE.

HAZARD CLASS	HAZARD CATEGORY
SKIN IRRITATION	2
SERIOUS EYE DAMAGE	1
SKIN SENSITIZATION	1

PICTOGRAM(S)



Precautionary Statements

Prevention:	Avoid breathing vapors, mist, or spray. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Wear eye and face protection. Wear protective gloves.
Response:	IF ON SKIN: Wash with plenty of soap and water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to remove. Continue rinsing. Immediately call a poison control center or physician. If skin irritation or rash occurs: Get medical attention. Take off contaminated clothing.
Storage:	Not prescribed
Disposal:	Dispose of contents and/or container according to Federal, State/Provincial and local governmental regulations.

Classification complies with OSHA Hazard Communication Standard (29 CFR 1910.1200) and is consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Component(s)	CAS Number	Percentage*

Dimethacrylate ester	Proprietary	30 - 60
Methacrylate monomer	Proprietary	10 - 30
2-Hydroxyethyl methacrylate	868-77-9	10 - 30
Polyurethane methacrylate resin	Unknown	5 - 10
Acrylic acid	79-10-7	1 - 5
Hydroxyalkyl methacrylate	27813-02-1	1 - 5
Cumene hydroperoxide	80-15-9	0.1 - 1
Polyglycol dimethacrylate	Proprietary	0.1 - 1
Methacrylic acid	79-41-4	0.1 - 1

* Exact percentage is a trade secret. Concentration range is provided to assist users in providing appropriate protections.

4. FIRST AID MEASURES

Inhalation:	Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Skin contact:	Immediately flush skin with plenty of water (using soap, if available). Remove contaminated clothing and footwear. Wash clothing before reuse. Get medical attention.
Eye contact:	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
Ingestion:	DO NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.
Symptoms:	See Section 11.

5. FIRE FIGHTING MEASURES

Extinguishing media:	Water spray (fog), foam, dry chemical or carbon dioxide.
Special firefighting procedures:	Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear. In case of fire, keep containers cool with water spray.
Unusual fire or explosion hazards:	Uncontrolled polymerization may occur at high temperatures resulting in explosions or rupture of storage containers.
Hazardous combustion products:	Oxides of carbon. Oxides of sulfur. Oxides of nitrogen. Irritating organic vapours.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions:	Do not allow product to enter sewer or waterways.
Clean-up methods:	Remove all sources of ignition. Evacuate and ventilate spill area; dike spill to prevent entry into water system; wear full protective equipment during clean-up. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Scrape up as much material as possible. Store in a partly filled, closed container until disposal. Refer to Section 8 "Exposure Controls / Personal Protection" prior to clean up.

7. HANDLING AND STORAGE

Handling: Use only with adequate ventilation. Prevent contact with eyes, skin and clothing. Do not breathe vapor and mist. Wash thoroughly after handling. Do not taste or swallow. Refer to Section 8.

Storage: For safe storage, store at or below 38 °C (100.4 °F)
Keep in a cool, well ventilated area away from heat, sparks and open flame.
Keep container tightly closed until ready for use.

For information on product shelf life contact Henkel Customer Service at (800) 243-4874.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous Component(s)	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Dimethacrylate ester	None	None	None	None
Methacrylate monomer	None	None	None	None
2-Hydroxyethyl methacrylate	None	None	None	3 ppm Ceiling
Polyurethane methacrylate resin	None	None	None	None
Acrylic acid	2 ppm TWA (SKIN)	None	None	1 ppm TWA 3 ppm STEL (SKIN)
Hydroxyalkyl methacrylate	None	None	None	1 ppm TWA 3 ppm STEL
Cumene hydroperoxide	None	None	1 ppm (6 mg/m3) TWA (SKIN)	None
Polyglycol dimethacrylate	None	None	None	None
Methacrylic acid	20 ppm TWA	None	None	None

Engineering controls: Provide adequate local exhaust ventilation to maintain worker exposure below exposure limits.

Respiratory protection: Use a NIOSH approved air-purifying respirator with an organic vapor cartridge. If this material is handled at elevated temperatures or under mist forming conditions, without engineering controls, a NIOSH approved respirator must be used.

Eyeface protection: Safety goggles or safety glasses with side shields. Full face protection should be used if the potential for splashing or spraying of product exists. Safety showers and eye wash stations should be available.

Skin protection: Use chemical resistant, impermeable clothing including gloves and either an apron or body suit to prevent skin contact. Neoprene gloves.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Liquid
Color:	Green
Odor:	Characteristic
Odor threshold:	Not available.
pH:	Not applicable
Vapor pressure:	< 10 mm hg (27 °C (80.6 °F))
Boiling point/range:	> 149 °C (> 300.2 °F)
Melting point/ range:	Not available.
Specific gravity:	1.1
Vapor density:	Not available.
Flash point:	93.3 °C (199.94 °F)
Flammable/Explosive limits - lower:	Not available.
Flammable/Explosive limits - upper:	Not available.

Autoignition temperature:	Not available.
Evaporation rate:	Not available.
Solubility in water:	Slight
Partition coefficient (n-octanol/water):	Not available.
VOC content:	< 3 %
Viscosity:	Not available.
Decomposition temperature:	Not available.

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions of storage and use.
Hazardous reactions:	Will not occur.
Hazardous decomposition products:	Oxides of carbon. Oxides of sulfur. Oxides of nitrogen. Irritating organic vapours.
Incompatible materials:	Strong oxidizing agents.
Reactivity:	Not available.
Conditions to avoid:	Elevated temperatures. Heat, flames, sparks and other sources of ignition. Store away from incompatible materials.

11. TOXICOLOGICAL INFORMATION

Relevant routes of exposure:	Skin, Inhalation, Eyes, Ingestion
-------------------------------------	-----------------------------------

Potential Health Effects/Symptoms

Inhalation: Inhalation of vapors or mists of the product may be irritating to the respiratory system.
Skin contact: Causes skin irritation. May cause allergic skin reaction.
Eye contact: Causes serious eye damage.
Ingestion: May cause gastrointestinal tract irritation if swallowed.

Hazardous Component(s)	LD50s and LC50s	Immediate and Delayed Health Effects
Dimethacrylate ester	None	Irritant, Allergen
Methacrylate monomer	None	No Records
2-Hydroxyethyl methacrylate	Oral LD50 (RAT) = 11.2 g/kg Oral LD50 (RAT) = 5,050 mg/kg	Irritant, Allergen
Polyurethane methacrylate resin	None	Irritant, Allergen
Acrylic acid	Oral LD50 (RAT) = 33.5 mg/kg Oral LD50 (RAT) = 2.5 g/kg Oral LD50 (RAT) = 193 mg/kg Oral LD50 (RAT) = 1,250 mg/kg Inhalation LC50 (RAT, 4 h) = 1,200 mg/l	Allergen, Corrosive, Irritant, Kidney, Liver
Hydroxyalkyl methacrylate	None	Irritant, Allergen
Cumene hydroperoxide	None	Allergen, Central nervous system, Corrosive, Irritant, Mutagen
Polyglycol dimethacrylate	None	Irritant, Allergen
Methacrylic acid	Oral LD50 (RABBIT) = 1,200 mg/kg Oral LD50 (RAT) = 1,060 mg/kg Oral LD50 (RAT) = 2,224 mg/kg Dermal LD50 (RABBIT) = 500 mg/kg Inhalation LC50 (RAT, 4 h) = 7.1 mg/l	Corrosive, Irritant, Allergen

Hazardous Component(s)	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Dimethacrylate ester	No	No	No
Methacrylate monomer	No	No	No
2-Hydroxyethyl methacrylate	No	No	No
Polyurethane methacrylate resin	No	No	No
Acrylic acid	No	No	No
Hydroxyalkyl methacrylate	No	No	No
Cumene hydroperoxide	No	No	No
Polyglycol dimethacrylate	No	No	No
Methacrylic acid	No	No	No

12. ECOLOGICAL INFORMATION

Ecological information: Not available.

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Follow all local, state, federal and provincial regulations for disposal.
Hazardous waste number: Not a RCRA hazardous waste.

14. TRANSPORT INFORMATION

The transport information provided in this section only applies to the material/formulation itself, and is not specific to any package/configuration.

U.S. Department of Transportation Ground (49 CFR)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

International Air Transportation (ICAO/IATA)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

Water Transportation (IMO/IMDG)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status: All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.
TSCA 12 (b) Export Notification: None above reporting de minimis
CERCLA/SARA Section 302 EHS: None above reporting de minimis
CERCLA/SARA Section 311/312: Immediate Health, Delayed Health
CERCLA/SARA Section 313: This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372). Acrylic acid (CAS# 79-10-7).
CERCLA Reportable quantity: Cumene hydroperoxide (CAS# 80-15-9) 10 lbs. (4.54 kg)
California Proposition 65: This product contains a chemical known in the State of California to cause cancer. This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Canada Regulatory Information

CEPA DSL/NDSL Status: One or more components are not listed on, and are not exempt from listing on either the Domestic Substances List or the Non-Domestic Substances List.

16. OTHER INFORMATION

This safety data sheet contains changes from the previous version in sections: New Safety Data Sheet format.

Prepared by: Sheila Gines, Regulatory Affairs Specialist
Issue date: 05/07/2014

DISCLAIMER: The data contained herein are furnished for information only and are believed to be reliable. However, Henkel Corporation and its affiliates ("Henkel") does not assume responsibility for any results obtained by persons over whose methods Henkel has no control. It is the user's responsibility to determine the suitability of Henkel's products or any production methods mentioned herein for a particular purpose, and to adopt such precautions as may be advisable for the protection of property and persons against any hazards that may be involved in the handling and use of any Henkel's products. In light of the foregoing, Henkel specifically disclaims all warranties, express or implied, including warranties of merchantability and fitness for a particular purpose, arising from sale or use of Henkel's products. Henkel further disclaims any liability for consequential or incidental damages of any kind, including lost profits.



Revision Number: 002.0

Issue date: 09/02/2014

1. PRODUCT AND COMPANY IDENTIFICATION

Product name:	LOCTITE 406 SURF. INSENS.INSTANT	IDH number:	135436
	AD. known as 406 Prism® Surface		
	Insensitive		
Product type:	Cyanoacrylate	Item number:	40640
Restriction of Use:	None identified	Region:	United States
Company address:	Contact information:		
Henkel Corporation	Telephone: (860) 571-5100		
One Henkel Way	MEDICAL EMERGENCY Phone: Poison Control Center		
Rocky Hill, Connecticut 06067	1-877-671-4608 (toll free) or 1-303-592-1711		
	TRANSPORT EMERGENCY Phone: CHEMTREC		
	1-800-424-9300 (toll free) or 1-703-527-3887		
	Internet: www.henkelna.com		

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

WARNING: BONDS SKIN IN SECONDS.
 COMBUSTIBLE LIQUID.
 CAUSES EYE IRRITATION.
 MAY CAUSE RESPIRATORY IRRITATION.

HAZARD CLASS	HAZARD CATEGORY
FLAMMABLE LIQUID	4
EYE IRRITATION	2B
SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE	3

PICTOGRAM(S)



Precautionary Statements

Prevention:	Keep away from heat, sparks, open flames, hot surfaces - no smoking. Avoid breathing vapors, mist, or spray. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves, eye protection, and face protection.
Response:	IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to remove. Continue rinsing. Call a poison control center or physician if you feel unwell. If eye irritation persists: Get medical attention. In case of fire: Use foam, dry chemical or carbon dioxide to extinguish.
Storage:	Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.
Disposal:	Dispose of contents and/or container according to Federal, State/Provincial and local governmental regulations.

Classification complies with OSHA Hazard Communication Standard (29 CFR 1910.1200) and is consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Component(s)	CAS Number	Percentage*
Ethyl 2-cyanoacrylate	7085-85-0	60 - 100
Thickener	Proprietary	1 - 5

* Exact percentage is a trade secret. Concentration range is provided to assist users in providing appropriate protections.

4. FIRST AID MEASURES

Inhalation:	Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.
Skin contact:	Do not pull bonded skin apart. Soak in warm soapy water. Gently peel apart using a blunt instrument. If skin is burned due to the rapid generation of heat by a large drop, seek medical attention. If lips are bonded, apply warm water to the lips and encourage wetting and pressure from saliva in mouth. Peel or roll lips apart. Do not pull lips apart with direct opposing force.
Eye contact:	Immediately flush with plenty of water for at least 15 minutes. Get medical attention. If eyelids are bonded closed, release eyelashes with warm water by covering with a wet pad. Do not force eye open. Cyanoacrylate will bond to eye protein and will cause a lachrymatory effect which will help to debond the adhesive. Keep eye covered until debonding is complete, usually within 1-3 days. Medical attention should be sought in case solid particles of polymerized cyanoacrylate trapped behind the eyelid caused abrasive damage.
Ingestion:	Ensure breathing passages are not obstructed. The product will polymerize rapidly and bond to the mouth making it almost impossible to swallow. Saliva will separate any solidified product in several hours. Prevent the patient from swallowing any separated mass.
Symptoms:	See Section 11.
Notes to physician:	Surgery is not necessary to separate accidentally bonded tissues. Experience has shown that bonded tissues are best treated by passive, non-surgical first aid. If rapid curing has caused thermal burns they should be treated symptomatically after adhesive is removed.

5. FIRE FIGHTING MEASURES

Extinguishing media:	Water spray (fog), foam, dry chemical or carbon dioxide.
Special firefighting procedures:	Wear a self-contained breathing apparatus with a full face piece operated in pressure-demand or other positive pressure mode.
Unusual fire or explosion hazards:	None
Hazardous combustion products:	Trace amounts of toxic and/or irritating fumes may be released and the use of breathing apparatus is recommended.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions:	Ventilate area. Do not allow product to enter sewer or waterways.
-----------------------------------	---

Clean-up methods:

Do not use cloths for mopping up. Flood with water to complete polymerization and scrape off the floor. Cured material can be disposed of as non-hazardous waste. Refer to Section 8 "Exposure Controls / Personal Protection" prior to clean up.

7. HANDLING AND STORAGE

Handling:

Prevent contact with eyes, skin and clothing. Do not breathe vapor and mist. Wash thoroughly after handling. Avoid contact with fabric or paper goods. Contact with these materials may cause rapid polymerization which can generate smoke and strong irritating vapors, and cause thermal burns.

Storage:

Keep in a cool, well ventilated area away from heat, sparks and open flame. Keep container tightly closed until ready for use.

For information on product shelf life contact Henkel Customer Service at (800) 243-4874.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous Component(s)	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Ethyl 2-cyanoacrylate	0.2 ppm TWA	None	None	None
Thickener	None	None	None	None

Engineering controls:

Use positive down-draft exhaust ventilation if general ventilation is insufficient to maintain vapor concentration below established exposure limits.

Respiratory protection:

Use NIOSH approved respirator if there is potential to exceed exposure limit(s).

Eye/face protection:

Safety goggles or safety glasses with side shields. Full face protection should be used if the potential for splashing or spraying of product exists.

Skin protection:

Use nitrile gloves and aprons as necessary to prevent contact. Do not use PVC, nylon or cotton.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Liquid
Color:	Clear, Colorless
Odor:	Sharp, Irritating
Odor threshold:	1 - 2 ppm
pH:	Not available.
Vapor pressure:	< 0.5 mm hg
Boiling point/range:	> 149 °C (> 300.2 °F)
Melting point/ range:	Not available.
Specific gravity:	1.1
Vapor density:	3
Flash point:	80 - 93 °C (176°F - 199.4 °F) Tagliabue closed cup
Flammable/Explosive limits - lower:	Not available.
Flammable/Explosive limits - upper:	Not available.
Autoignition temperature:	485 °C (905°F)
Evaporation rate:	Not available.
Solubility in water:	Polymerizes on contact with water.
Partition coefficient (n-octanol/water):	Not available.
VOC content:	< 2 %; < 20 g/l (California SCAQMD Method 316B) (Estimated)
Viscosity:	Not available.
Decomposition temperature:	Not available.

10. STABILITY AND REACTIVITY

Stability:	Stable under recommended storage conditions.
Hazardous reactions:	Rapid exothermic polymerization will occur in the presence of water, amines, alkalis and alcohols.
Hazardous decomposition products:	Toxic fumes.
Incompatible materials:	Water, Amines, Alkalis, Alcohols.
Reactivity:	Not available.
Conditions to avoid:	Spontaneous polymerization.

11. TOXICOLOGICAL INFORMATION

Relevant routes of exposure: Skin, Inhalation, Eyes

Potential Health Effects/Symptoms

Inhalation:	May cause respiratory tract irritation. Exposure to vapors above the established exposure limit results in respiratory irritation, which may lead to difficulty in breathing and tightness in the chest.
Skin contact:	May cause skin irritation. Bonds skin in seconds. Cyanoacrylates have been reported to cause allergic reaction but due to rapid polymerization at the skin surface, an allergic response is rare. Cyanoacrylates generate heat on solidification. In rare circumstances a large drop will burn the skin. Cured adhesive does not present a health hazard even if bonded to the skin.
Eye contact:	Irritating to eyes. Causes excessive tearing. Eyelids may bond.
Ingestion:	Not expected to be harmful by ingestion. Rapidly polymerizes (solidifies) and bonds in mouth. It is almost impossible to swallow.

Hazardous Component(s)	LD50s and LC50s	Immediate and Delayed Health Effects
Ethyl 2-cyanoacrylate	None	Irritant, Allergen, Respiratory
Thickener	None	Irritant

Hazardous Component(s)	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Ethyl 2-cyanoacrylate	No	No	No
Thickener	No	No	No

12. ECOLOGICAL INFORMATION

Ecological information: Not available.

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Dispose of according to Federal, State and local governmental regulations.
Hazardous waste number: Not a RCRA hazardous waste.

14. TRANSPORT INFORMATION

The transport information provided in this section only applies to the material/formulation itself, and is not specific to any package/configuration.

U.S. Department of Transportation Ground (49 CFR)

Proper shipping name: Combustible liquid, n.o.s. (Cyanoacrylate ester)
Hazard class or division: Combustible Liquid
Identification number: NA 1993
Packing group: III

International Air Transportation (ICAO/IATA)

Proper shipping name: Aviation regulated liquid, n.o.s. (Cyanoacrylate ester)
Hazard class or division: 9
Identification number: UN 3334
Packing group: III
Exceptions: Primary packs containing less than 500ml are unregulated by this mode of transport and may be shipped unrestricted.

Water Transportation (IMO/IMDG)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status: All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.
TSCA 12 (b) Export Notification: None above reporting de minimis
CERCLA/SARA Section 302 EHS: None above reporting de minimis
CERCLA/SARA Section 311/312: Immediate Health, Delayed Health, Fire, Reactive
CERCLA/SARA Section 313: None above reporting de minimis
California Proposition 65: No California Proposition 65 listed chemicals are known to be present.

Canada Regulatory Information

CEPA DSL/NDSL Status: Contains one or more components listed on the Non-Domestic Substances List. All other components are listed on or are exempt from listing on the Domestic Substances List. Components listed on the NDSL must be tracked by all Canadian Importers of Record as required by Environment Canada. They may be imported into Canada in limited quantities. Please contact Regulatory Affairs for additional details.

16. OTHER INFORMATION

This safety data sheet contains changes from the previous version in sections: New Safety Data Sheet format.

Prepared by: Catherine Bimler, Regulatory Affairs Specialist
Issue date: 09/02/2014

DISCLAIMER: The data contained herein are furnished for information only and are believed to be reliable. However, Henkel Corporation and its affiliates ("Henkel") does not assume responsibility for any results obtained by persons over whose methods Henkel has no control. It is the user's responsibility to determine the suitability of Henkel's products or any production methods mentioned herein for a particular purpose, and to adopt such precautions as may be advisable for the protection of property and persons against any hazards that may be involved in the handling and use of any Henkel's products. In light of the foregoing, Henkel specifically disclaims all warranties, express or implied, including warranties of merchantability and fitness for a particular purpose, arising from sale or use of Henkel's products. Henkel further disclaims any liability for consequential or incidental damages of any kind, including lost profits.

MATERIAL SAFETY DATA SHEET Acc. to article 31 and Annex II of the EU REACH Regulation

Date of issue: 06.11. 2012

Version 01 of 01.10.2012; Revision 0

LINOMAX Special-Grease – semi-synthetic

Seite 1/4

1. SUBSTANCE-/PREPARATION AND COMPANY IDENTIFICATION

- 1.1 CHEMICAL NATURE /APPLICATION/CHARACTER: White lubricating grease paste for industrial use
(Lubricant and additives)
- 1.2 ADDRESS OF PRODUCER/SUPPLIER: Schunk GmbH & Co. KG
Bahnhofstraße 106-134
D-74348 Lauffen a.N.
- Germany -
Precode Germany: 0049
(0)7133/103-0 (Schunk)
- 1.3 EMERGENCY CONTACT

2. HAZARDS IDENTIFICATION

- 2.1 HAZARDOUS TO HEALTH
R37/38 Irritating to respiratory system and skin
R41 Risk of serious damage to eyes
This health hazard assessment is based on a consideration of the composition of this product. This product is not hazardous to health by using as defined. Nevertheless, normal hygiene rules by working with chemical products should be considered. Extreme high exposition may lead to skin- and eye irritation.
- 2.2 SAFETY RISKS
No risk by using as defined
- 2.3 RISKS FOR ENVIRONMENT
- 2.4 FURTHER INFORMATIONS

3. COMPOSITION / INFORMATION OF INGREDIENTS

- 3.1 MATERIAL:
- 3.2 CAS-No.:
- 3.3 FORMULATION: X
- 3.4 CHEMICAL CHARACTER: Lubricating grease based on severe treat mineral oil, synthetic oil, solid lubricants, thickener and additives
- 3.5 DANGEROUS INGREDIENT
- | Name in acc. to EG | CAS-No. | EINECS-No. | Classification | R-phrases | quantity |
|--------------------|-----------|------------|----------------|-------------|----------|
| Calciumhydroxid | 1305-62-0 | 215-137-3 | Xi | R 37/38, 41 | < 30 |

4. FIRST AID MEASURES

- 4.1 CONTACT WITH SKIN Remove contaminated clothing. Wash skin with soap and water. If symptoms develop, obtain medical attention. Use a skin creme for receiving the natural skin film.
- 4.2 CONTACT WITH EYE If substance has gone into the eyes, immediately wash out with plenty of water or prein solution until medical assistance is provided. Retract eyelids often. Contact a doctor.
- 4.3 INGESTION Do not induce vomiting. Wash out mouth with water. Obtain medical attention immediately.
- 4.4 INHALATION Not expected to be a problem. No first aid should be needed
- 4.5 ADDITIONAL INFORMATION Remove patient from exposure, keep warm and at rest. Obtain medical attention if ill effects occur. High pressure accidental injection through the skin requires immediate medical attention for possible incision, irrigation and / or debridement.

5. FIRE-FIGHTING MEASURES

- 5.1 SUITABLE EXTINGUISHING MEDIA Not classed as flammable. If involved in a fire, it may emit noxious and toxic fumes. Use foam, carbon dioxide (CO₂), dry chemical or water fog
- 5.2 UNSUITABLE EXTINGUISHING MEDIA Water in beam-form
- 5.3 SPECIAL DANGER In case of fire and/or explosion do not breath fumes.
- 5.4 SPECIAL PROTECTION EQUIPMENT Product may give off toxic fumes in a fire. Firefighters must wear breathing apparatus and protective clothing. During fire or at very high heat thermal break down of product involves decompositions-products such as carbon oxide, incompletely burned carbon, formaldehyde, phosphorus products ...
- 5.5 FURTHER INFORMATION Water may be used to cool closed containers to prevent pressure build up and to keep fore exposed containers cool.

LINOMAX Special-Grease – semi-synthetic

6 ACCIDENTIAL RELEASE MEASURES

- 6.1 PERSONAL PRECAUTIONS /PROTECTIVE Use protection standard as usual by working with chemicals. Avoid plug-building. Keep away unprotected people. Avoid contact with eyes and skin. Avoid breathing vapours. Wear proper protective equipment.
- 6.2 ENVIRONMENTAL PRECAUTIONS Do not release to the environment. Do not allow large quantities to enter drains or surface waters
- 6.3 METHODS OF CLEANING/ BESEITIGUNG Absorb spillages in sand, earth or any suitable absorbent material. Transfer to a container for disposal. In case of bigger quantities inform public authority
- 6.4 FURTHER INFORMATIONS The spilled product produces an extremely slippery surface

7 HANDLING AND STORAGE

- 7.1 HINTS FOR SAFE HANDLING Normal security rules for organic products with al flash point higher than 100°C. Avoid eye and skin contact. High pressure injection under the skin may occur due to the rupture of pressurized lines. Always seek medical attention. Do not breathe spray or mist. Do not empty into drains. Ventilation is recommended
- 7.2 HINTS FOR STORAGE Do not storage in open or unlabeled containers. Store away from strong oxidizing agents or combustible material
- 7.3 REQUIREMENTS TO STORAGE ROOMS-/CONDITIONS see 7.2, no special requirements, store dry Avoid contact with air.
- 7.4 HINTS FOR CONNECTING-STORAGE see 7.2, no special requirements
- 7.5 FURTHER INFORMATION Specific use: Refer to technical data sheet
Keep container closed

8 EXPOSURE CONTROLLS / PERSONAL PROTECTION EQUIPMENT

- 8.1 TECHNICAL PROTECTIVE MEASURES No special requirements under ordinary conditions of use and with adequate ventilation.
- 8.2 EXPOSURE CONTROL LIMITS HINT: All powders are bounded in oil, so by use as defined, no powder-dust is possible
- 8.2.1 MAK-VALUE

NAME	CAS-No.	EINIECS-NO.	mg/m ³
Calciumhydroxid	1305-62-0	215137-3	5 (as dust)
- 8.2.2 COMPANY-INTERNAL LIMITS none special. See section 7.1
- 8.3 RESPIRATORY PROTECTION No special requirements under ordinary conditions of use and with adequate ventilation. If aerosol or mist (by spraying or similar activities) may be generated, a suitable respirator must be worn. Depending on exact conditions, use mask with filter or self-contained respirator. The coice of a filter depends on the amount and type of chemical at the working place. Contact your respiratory protection supplier for filter characteristics.
- 8.3.1 SKIN-PROTECTION If prolonged or repeated skin contact is likely, oil impervious gloves must be worn. Contactv supplier of protecting gloves for suitable material (e.g. PVA) Good personal hygiene practices should always be followed.
- 8.3.2 EYE-PROTECTION General eye contact is unlikely with this type of material. If eye contact is likely, safety glases with side shields or chemical type of goggles should be worn.
- 8.3.3 INHALATION-PROTECTION General inhalation is unlikely with this type of material.
- 8.3.4 WEAR as usual by working with organic chemical products
- 8.4 FURTHER INFORMATION These precautions are for room temperature handling. Different conditions (e.g. elevated temperatures may require added precautions)

Date of issue: 06.11. 2012

Version 01 of 01.10.2012; Revision 0

LINOMAX Special-Grease – semi-synthetic

Seite 3 / 4

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 <u>PHYSICAL STATE:</u>		grease-paste	
9.2 <u>COLOUR</u>		white-beige-coloured	
9.3 <u>ODOUR</u>		weak	
9.4 <u>CHANCE IN PHYSICAL STATE</u>	<u>MELTING POINT</u>	not determined	
	<u>BOILING POINT/RANGE</u>	> 300°C	
	<u>DROPPING POINT</u>	> 180 °C	
9.5 <u>FLASH POINT</u>		> 200 °C	DIN 51376
9.6 <u>IGNITION TEMPERATURE</u>		not determined	
9.7 <u>EXPLOSION LIMITS</u>	<u>LOWER</u>	not determined	
	<u>UPPER</u>		
9.8 <u>VAPOUR PRESSURE</u> (20°C)		not determined	
9.9 <u>DENSITY</u> (20°C; 1bar)		appr. 1,1 g/cm ³	
9.10 <u>SOLUBILITY IN WATER</u> (20°C)		negligible	
9.11 <u>pH-VALUE</u> (20°C)		not determined	

10 STABILITY AND REAKTIVITY

10.1 <u>REACTIVITY</u>	None known
10.2 <u>STABILITY</u>	Stable at normal using conditions. At temperatures above 580° decomposition of Calciumhydroxide to Calciumoxide and water
10.3 <u>POSSIBILITY OF HAZARDOUS REACTIONS</u>	None known
10.4 <u>THERMAL DECOMPOSITION</u>	Stable. Avoid extreme heat.
10.5 <u>CONDITIONS TO BE AVOIDED</u>	Extreme heat
10.6 <u>MATERIALS TO BE AVOIDED</u>	Can react with strong oxidising agents
10.7 <u>HARZARDOUS DECOMPOSITION PRODUCTS</u>	None known-by normal using. In case of decomposition different decomposition products developed. The composition of these products depends on exact decomposition codlitions. Carbon oxide and traces of incompletely burned carbon compounds, formaldehyde, phosphorus products
	CO ₂ /CO, elemental oxides, metal oxides and other undefined decomposition products (formaldehyde, phosphorus products..)
	IN CASE OF FIRE
10.8 <u>FURTHER INFORMATIONS</u>	none

11 TOXICOLOGICAL INFORMATIONS

ACUTE TOXICITY:	
11.1 <u>ORAL TOXICITY</u> LD50	Practically non-toxic (LD 50: greater than 2000 mg/kg; based on testing of similar products)
11.2 <u>SKIN IRRITATION</u>	Prolonged contact may lead to slight irritation (Primary Irritation-Index: greater than 0,5 but less than 3; Based on testing of similar products)
11.3 <u>EYE IRRITATION</u>	Risk of serious damage to eyes*
11.4 <u>INHALATION</u>	No adverse effects are normally expected (under ordinary conditions not applicable)
11.5 <u>ON INGESTON</u>	Smallest quantities reaching the lungs through swallowing or subsequent vomiting may result in lung oedema or pneumonia
CHRONIC TOXICITY:	
11.6 <u>ON SKIN CONTACT:</u>	Can irritate on prolonged or repeated contact
11.7 <u>IF INHALED</u>	No adverse effects normally expected
11.8 <u>ON INGESTION</u>	Repeated swallowing may cause gastrointestinal irritation and disturbance
11.9 <u>OTHER INFORMATIONS</u>	*)This product contains powders, which are hazardous by inhalations. However this is not relevant due to the physical form of the product, where powders are not in a respirable form.

12 ECOLOGICAL INFORMATION

12.1 <u>AKUTE FISH-TOXICITY</u> (LC50/96 h)	> 100 mg/l (base-oil; OECD 203)
12.2 <u>EFFECT-CONCENTRATION</u> (EC50/24 h)	> 10 g/l (base-oil; DIN 38412, p. 8)
12.3 <u>PERSISTENCE AND EGRADABILITY</u>	Solid material, insoluble in water, no adverse effects are predicted
12.4 <u>BIOACCUMULATION</u>	No bioaccumulation potential
<u>FURTHER INFORMATIONS</u>	This product is expected to be inherently biodegradable. There is no evicence to suggest bioaccumulation will occur. It may be harmful to aquatic organisms.

LINOMAX Special-Grease – semi-synthetic

13 DISPOSAL CONSIDERATIONS

PRODUCT AND PACKAGING

Dispose in accordance with local and state regulations. According to European waste catalogue, waste codes are not product specific, but application specific. Waste codes should be assigned by the user, preferable in discussion with the waste disposal authorities

14 TRANSPORT INFORMATIONS

- 14.1 UN-NR: Not regulated
- 14.2 GGVS/ADR: Not regulated
- 14.3 GGVE/RID Not regulated
- 14.4 GGVBinSch/ADNR: Not regulated
- 14.5 GGVSEE / IMDG - CODE Not regulated
- 14.6 ICAO / IATA - DRG Not regulated
- 14.7 FLASH-POINT > 200°C
- 14.8 TECHN. NAME STREET TRANSPORT NOT RERSTRICTED
- 14.9 ADDITIONAL INFORMATIONS Not classified as hazardous for transport. EU labelling not required

15 REGULATORY INFORMATIONS

15.1 MARKING TO EEC REGULATIONS

- X_i: Irritant
- R-phrases
- R37/38: Irritating to respiratory system and skin
- R41: Risk of serious damage to eyes
- S-phrases:
- S 2: Keep out of the reach of children
- S 24/25: Avoid contact with skin and eyes
- S 26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
- S 37/39: Wear suitable gloves and eye/face protection
- S 46: If swallowed, seek medical advice immediately and show this container or label

PRODUCT CONTAINS

15.2 NATIONAL REGULATIONS

- VOC-Content: 0%
- Flammability: not flammable
- TA - LUFT: no informations available
- WGK 1 (in accordance to VCI)

15.3 SAFETY, HEALTH AND ENVIRONMENTAL REGULATION

- DSL All ingrediants are listed or exempt
- TSCA All chemical substances in this material are included on or exempted form listing on the TSCA Inventory of Chemical Substance
- AICS All ingrediants are listed, exempt or notified
- IECSC All ingrediants are listed or exempt
- EINECS All ingrediants are listed, exempt or notified (ELINCS)
- KECL All ingrediants are listed, exempt or notified
- PICCS All ingrediants are listed, exempt or notified

16 FURTHER INFORMATIONS

16.1 R-phrases mentioned in this documentb (Not marking of the product)

- R37/38 Irritating to eyes and skin
- R41 Risk of serious damage to eyes

16.1 EDITOR Product safety department

16.2 VERSION REPLACES VERSION : 01 dd. 01.03.2009

The informations are based on our knowledge at present time and describe the product for safety requirements. The safety data sheet therefore has not the meaning to assure product properties. The datas don't justify a law contract. The product is only for industrial use.

This product safety data sheet was prepared in compliance with article 31 Annex II of the EU REACH Regulation as well as its relevant amendements, on the approximation of laws, regulations and administrative provisions relative to the classification, packaging and laelling of dangerous substance and preparations.

It is the responsibility of persons in receipt of this safety data sheet to ensure, that the information containe in this sheets is properly read and understood by all people who may use, handle, dipose or in any way come in contact with this product. If the recipient subsequently produces formulations containing this product, it is the recipient's sole responsibility to ensure the transfer of all relevant information from this product to their own safety data sheet.

All informations and instructions provided in this safety data sheet are based on current state of scientific and technical knowledge at the date indicated on the present SDS. Microgleit shall not be held responsible for any defect in the product covered by this safety data sheet, should the existence of such defect not be detecable considering the current state of scientific and technical knowledge.

As stated above, this safety data sheet has been prepared in compliance to applicable European law. If you purchase this product outside of Europe, where compliance laws may differ, you should ask Microgleit to the availability of a safety data sheet of this country. Please note that the content of the safety data sheet – even for the same product – could be different – reflecting the different compliance requirements.

MATERIAL SAFETY DATA SHEET

Manufactured For: Schaeffer Mfg. Company		Emergency Response Number:				
Address: 102 Barton Street		314-865-4105 or				
Address: St. Louis, MO 63104		800-325-9962 SILVER STREAK				
SECTION 1 - PRODUCT INFORMATION						
Chemical Family: Petroleum hydrocarbons & additives		Trade Name: #279 Spindle Compound #2				
Formula: Proprietary mixture						
SECTION 2 - HAZARDOUS INGREDIENTS						
COMPONENTS-CHEMICAL NAMES AND COMMON NAMES	CAS Number	%	Exposure Limits			
			TVL		PEL	
			ppm	mg/m ³	ppm	mg/m ³
Petroleum Base Oil	64742-54-7, 64742-65-0, 64742-16-1	66-68		5.0		5.0
Polyalphaolefin Synthetic Base Fluids	68037-01-4	15-17		5.0		5.0
Molybdenum Disulfide	1317-33-5	1-2		10		
Antimony Dithiocarbamate	15890-52-5	1-3		0.5		0.5
Graphite	7782-42-5	1-2		2		
Zinc Dipenthyldithiocarbamate	15337-18-5	0.5	N.E.	N.E.	N.E.	N.E.
Acetylene Black	1333-86-4			3.5		3.5
Section 3 - PHYSICAL DATA						
Boiling Point:	>600°F/315.5°C	Specific Gravity:	1.02			
Vapor Pressure (mm, Hg):	<.1	% Volatile:	Not Determined			
Vapor Density (Air = 1):	Not Determined	Evaporation Rate: (=1)	Not Applicable			
Solubility in Water:	Negligible	pH:	Not Applicable			
Appearance and Odor: Black color, tacky, petroleum odor.						
SECTION 4 - FIRE AND EXPLOSION HAZARD DATA						
Flash Point (Method) °F/°C: 518°F/270°C C.O.C. (ASTM D-92)		Flammability Limits UEL & LEL: ---- Not Determined				
Extinguishing Media: Carbon dioxide foam, dry chemical foam, sand, earth, waterfog.						
Special Fire Fighting Procedures: For fires involving this material, do not enter any enclosed or confined space without protective equipment including self-contained breathing apparatus.						
Unusual Fire & Explosion Hazards: None expected.						
SECTION 5 - REACTIVITY HAZARD DATA						
STABILITY	<input checked="" type="checkbox"/> STABLE	<input type="checkbox"/> UNSTABLE	Hazardous Decomposition <input type="checkbox"/> WILL <input checked="" type="checkbox"/> WILL NOT OCCUR			
Conditions to Avoid: High heat, high energy ignition sources						
Incompatibility (Mat. to avoid): Strong oxidizing agents						
Hazardous Decomposition Products: Oxides of carbon, sulfur, antimony and nitrogen.						
Conditions to Avoid: None						
SECTION 6 - HEALTH HAZARD DATA						
Threshold Limit Value and Sources: 5.0/mg/m ³ for oil mist. OSHA & ACGIH.						
Acute Effects of Overexposure:						
Ingestion:	Nausea and Diarrhea. Tackiness agents in this product may be possibly coagulated by stomach acids.					
Eye Contact:	Irritation and redness to eyes					
Skin Contact:	Prolonged or repeated skin contact may cause a mild skin irritation.					
Inhalation:	Vapors can be given off under high heat conditions excessive breathing of vapors can cause irritation of the respiratory tract.					
CHRONIC EFFECTS OF OVEREXPOSURE: If ingested in large amounts or repeatedly, damage to the cardiovascular system and respiratory tract can occur.						
Emergency and First Aid Procedures:						
Swallowing:	If a large volume of this material is swallowed, give a large amount of water to drink. Do not induce vomiting. Call a physician. Treat medically for possible abdominal blockage.					
Skin:	Wash thoroughly with soap and water. Launder contaminated clothing.					
Inhalation:	Remove to fresh air. If breathing is irregular or has stopped, start artificial respiration or administer oxygen if available.					
Eyes:	Flush eyes with clear, cool, clean water for 15 minutes. Seek medical attention immediately					
SECTION 7 - SPILL OR LEAK PROCEDURES						
Environmental Impact: This material is not expected to present any environmental problems other than those associated with oil spills. If spilled into a watercourse, call the Coast Guard Toll Free No. 800-424-8802.						
Procedures To Be Taken if Material is Released or Spilled: Absorb spills with absorbent with clay, diatomaceous earth or other suitable material. Keep out of sewers and watercourses.						
Waste Disposal Method: Dispose of in accordance with all applicable federal, state and local laws and regulations.						
SECTION 8 - SPECIAL PROTECTION INFORMATION						
Respiratory Protection:	None required under ordinary conditions of use.					
Ventilation:	No special requirement under ordinary conditions of use and with adequate ventilation.					
Eye Protection:	Goggles or face shield.					
Protective Clothing:	Oil resistant gloves.					

SECTION 9 -- SPECIAL PRECAUTIONS				
Precautions To Be Taken In Handling and Storage: Keep container closed when not in use. Do not handle or store near heat, spark, flame or strong oxidizers.				
Special Comments: Remove oil soaked clothing, launder before reuse. Wash skin thoroughly with soap and water after handling. Keep away from food and feed products.				
SECTION 10 -- ADDITIONAL HEALTH AND TOXICOLOGICAL DATA				
HMIS & NFPA Ratings: Health = 1 Fire = 1 Reactivity = 0				
This product does not contain any chemicals listed on the National Toxicology Program's Annual Reports, the International Agency for Cancer Research's Monographs or OSHA's 1910.10 subpart Z list.				
This product does not contain any of the chemicals found on the State of California's Proposition 65 list as potential reproductive toxins or cancer causing agents.				
SARA Title III Information:				
This product contains 1-3% antimony dithiocarbamate CAS#15890-52-5 and 0.5% Zinc Dipentylidithiocarbamate CAS#15337-18-5. Product RQ for stationary source, to release the RQ for the listed compounds is as follows:				
Component	%	RQ Value	Description	Product RQ
Antimony dithiocarbamate	1-3	5000 lb.	Antimony & cpds.	250,000 lbs.
Zinc Dipentylidithiocarbamate	0.5	1000 lbs.	Zinc & Zinc cpds.	23,553 lbs.

Although the information and recommendations set forth herein (hereafter referred to as information) are presented in good faith and believed to be accurate and factual as of the date hereof, Schaeffer Mfg. Company makes no representation as to the completeness or accuracy thereof. Information is supplied upon the condition that the person receiving the same will make their own determination as to its safety and suitability for their purposes prior to use. In no event will Schaeffer Mfg. Company be responsible for damages of any natures whatsoever resulting from the use or reliance upon information. **No representation or warranty, either expressed or implied, of merchantability or fitness for a particular purpose is made with respect to information of the product to which the information refers.**



Material Safety Data Sheet - MSDS

Section 1. Chemical Product and Company Identification

Product name	Classification	Classification
AL-731	CSA:	AWS:
Description	: Nozzle gel for MIG gun nozzles	Generic Code : ALG902
<u>In case of emergency</u>	: 1-514-878-1667	Date of issue : 01/10/2014
Supplier	: Air Liquide Canada Inc., 1250, René-Lévesque Ouest, Suite 1700, Montréal, QC H3B 5E6	

Section 2. Hazards Identification

Physical state and Appearance : Solid. [Gel.]

Emergency overview : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.

WARNING!
ELECTRIC SHOCK can kill.
FUMES AND GASES can be dangerous to your health.
ARC RAYS can injure eyes and burn skin.
NOT EXPECTED TO PRODUCE SIGNIFICANT ADVERSE HEALTH EFFECTS WHEN THE RECOMMENDED INSTRUCTIONS FOR USE ARE FOLLOWED.

Routes of entry : Dermal contact.

Potential acute health effects

- Eyes : Slightly hazardous by the following route of exposure: of eye contact (irritant).
- Skin : Slightly hazardous by the following route of exposure: of skin contact (irritant).
- Inhalation : Non-hazardous in case of inhalation.
- Ingestion : Since the product (welding fumes) is a gas and that it is mostly probable that it will be inhaled more than ingested, please consider first to look at the preventive measures in case of inhalation.

Potential chronic health effects :

Carcinogenicity

Not available.

Mutagenic effects Not available.

Teratogenic effects: Not available.

Medical conditions aggravated : None known.
by over-exposure

(* See Abbreviations (section 16).

Section 3. Composition, Information on Ingredients

Name	CAS #	% by weight	UN number
------	-------	-------------	-----------

No hazardous ingredient.

The fumes emitted by the electrodes, in use, are hazardous. This MSDS is written for workers using these electrodes.

Section 4. First Aid Measures

- Eye contact : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention if symptoms occur.
- Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.
- Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms occur.
- Ingestion : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

Section 5. Fire Fighting Measures

- Flammability of the product : Non-flammable.
Explosibility : Not considered to be a product presenting a risk of explosion.
- Fire-fighting media and instructions : Use an extinguishing agent suitable for the surrounding fire.

Section 6. Accidental Release Measures

- Small/Large Spill and Leak : Use appropriate tools to transfer the spilled solid to a convenient waste disposal container.

Section 7. Handling and Storage

- Handling : Avoid breathing dust.
Storage : Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls, Personal Protection

- Engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protection

- Eyes : Safety glasses with side shields. Face shield with radiation shielding.
Body : Full suit. Fire resistant.
Respiratory : Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear a canister breathing apparatus (respirator) or a supplied-air respirator, when required, to weld in a confined space or when room exhaust or ventilation does not keep exposure below the acceptable values.
Hands : Gloves. Fire resistant.
Feet : Metal cap, safety boots.

Occupational exposure limits

No exposure limit value known.

Section 9. Physical and Chemical Properties

- Physical state and Appearance : Solid. [Gel.]
Color : Blue.
Odor : Odorless.
Melting/freezing point : 68 to 77°C (154.4 to 170.6°F)
Specific gravity : 0.815 to 0.88 [Water = 1]
Solubility : Insoluble in the following materials: cold water and hot water.

Section 10. Stability and Reactivity

- Stability and reactivity : The product is stable.
Hazardous decomposition products : Metallic oxides. carbon oxides (CO, CO₂) Arc radiation can support the production of ozone and nitrogen oxides.
Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological Information

- Chronic effects and other toxic effects on humans : Not available.
Slightly hazardous by the following route of exposure: of skin contact (irritant), of eye contact (irritant).
Non-hazardous in case of inhalation.

Section 12. Ecological Information

- Ecotoxicity data
Products of degradation : carbon oxides (CO, CO₂) and water

Section 13. Disposal Considerations

- Waste information : Waste must be disposed of in accordance with federal, state and local environmental control regulations. Recycle, if possible.
Consult your local or regional authorities.

Section 14. Transport Information

No transport class is found applicable to this product.

Section 15. Regulatory Information

HCS Classification : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Not regulated.

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption:** All components are listed or exempted.
United States inventory (TSCA 8b): All components are listed or exempted.
SARA 302/304: No products were found.
SARA 311/312 Hazards Identification: Not regulated.

State regulations : **Massachusetts** : None of the components are listed.
New York : None of the components are listed.
New Jersey : None of the components are listed.
Pennsylvania : None of the components are listed.
None of the components are listed.

WHMIS (Canada) : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Not controlled under WHMIS (Canada).
CEPA Toxic substances: None of the components are listed.
Canadian ARET: None of the components are listed.
Canadian NPRI: None of the components are listed.
Alberta Designated Substances: None of the components are listed.
Ontario Designated Substances: None of the components are listed.
Quebec Designated Substances: None of the components are listed.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Section 16. Other Information

Label requirements : See Section 2.

Hazardous Material Information System (U.S.A.) : Health: 1 Fire: 0 Reactivity: 0

National Fire Protection Association (U.S.A.) : Health: 1 Fire: 0 Reactivity: 0 Other: None

References : - 29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. - CRC Handbook of chemistry and physics, 67th edition. CRC Press inc., Boca Raton, Florida. - Manufacturer's Material Safety Data Sheet. ANSI Z400.1, MSDS Standard, 2004. ANSI Z49.1 Safety in Welding and Cutting, The American Welding Society, P.O. Box 351040, Miami, FL 33135. Canadian Standard Association, CSA W117.2, Code for Safety in Welding and Cutting, 2003.

Abbreviations and acronyms : **ACGIH: American Conference of Governmental Industrial Hygiene.**
ACGIH-A1-Confirmed Human Carcinogen.
ACGIH-A2-Suspected Human Carcinogen.
ACGIH-A3-Animal Carcinogen.
ACGIH-A4-Not Classifiable as a Human Carcinogen.
ACGIH-A5-Not suspected as a Human Carcinogen.
IARC: International Agency for Research on Cancer.
IARC 1: Proven.
IARC 2A: Probable for human.
IARC 2B: Possible for human.
IARC 3: Not classifiable for human.
NIOSH: National Institute of Occupational Safety and Health.
NIOSH +: Proven.
NIOSH: None.
EU: European Union
Carc. 1A : May cause cancer (Known)
Carc. 1B : May cause cancer (Presumed)
Carc. 2 : Suspected of causing cancer
NTP: National Toxicology program.
NTP 1: Known to be human carcinogens.
NTP 2: Reasonably Anticipated to be human carcinogens.

Responsible name : IHS

Date of previous issue : 01/15/2011

Version : 6

Notice to reader

THE INFORMATION, RECOMMENDATIONS AND DATA CONTAINED IN THIS DOCUMENT ARE INTENDED TO BE USED BY PROPERLY TRAINED AND QUALIFIED PERSONNEL ONLY AND AT THEIR SOLE RISKS AND DISCRETION. THE INFORMATION, RECOMMENDATIONS AND DATA HEREIN CONTAINED ARE DERIVED FROM SOURCES WHICH WE BELIEVE TO BE RELIABLE. HOWEVER, AIR LIQUIDE CANADA INC. MAKES NO REPRESENTATION AND GIVES NO WARRANTY OF ANY KIND WHATSOEVER WITH RESPECT TO THEIR ACCURACY OR COMPLETENESS AND ASSUMES NO LIABILITY FOR DAMAGES OR LOSS ARISING DIRECTLY OR INDIRECTLY FROM THEIR USE, WHETHER PROPER OR IMPROPER.

NONE.

Product Name: Stargon SS

MSDS# E-6212-E

Date: Oct. 15, 2013

Praxair Material Safety Data Sheet

1. Chemical Product and Company Identification

Product Name: Stargon SS	Trade Name: Stargon SS
Product Use: Many.	
Chemical Name: Carbon Dioxide & Inert Gases	Synonym: Not applicable.
Chemical Formula: Not applicable.	Chemical Family: Not applicable.
Telephone: Emergencies: * 1-800-363-0042	Supplier /Manufacture: Praxair Canada Inc. 1 City Centre Drive Suite 1200 Mississauga, ON L5B 1M2 Phone: 905-803-1600 Fax: 905-803-1682

**Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier or Praxair sales representative.*

2. Composition and Information on Ingredients

INGREDIENTS	% (VOL)	CAS NUMBER	LD ₅₀ (Species & Routes)	LC ₅₀ (Rat, 4 hrs.)	TLV-TWA (ACGIH)
Carbon dioxide	1-5	124-38-9	Not available.	Not available.	5000 ppm
Nitrogen	1-5	7727-37-9	Not available.	Not available.	Simple asphyxiant.
Argon	90-98	7440-37-1	Not available.	Not available.	Simple asphyxiant.

3. Hazards Identification

Emergency Overview

CAUTION! High-pressure gas. Can cause rapid suffocation. May cause dizziness and drowsiness. Self-contained breathing apparatus may be required by rescue workers.

ROUTES OF EXPOSURE: Inhalation.

EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:

INHALATION: Asphyxiant. Effects are due to lack of oxygen. Moderate concentrations may cause headaches, drowsiness, dizziness, excitation, excess salivation, vomiting, and unconsciousness. Lack of oxygen can kill.

SKIN CONTACT: No harm expected from vapour.

SKIN ABSORPTION: No evidence of adverse effects from available information.

SWALLOWING: A highly unlikely route of exposure. This product is a gas at room temperature and pressure.

EYE CONTACT: Vapour may cause a stinging sensation.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE:

No evidence of adverse effects from available information.

OTHER EFFECTS OF OVEREXPOSURE:

Damage to retinal ganglion cells and central nervous system may occur.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

Repeated or prolonged exposure is not known to aggravate medical condition.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:

None currently known.

CARCINOGENICITY:

Not listed as carcinogen by OSHA, NTP or IARC.

4. First Aid Measures

INHALATION:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, qualified personnel may give oxygen. Call a physician.

SKIN CONTACT:

This product is a gas.

SWALLOWING:

This product is a gas at normal temperature and pressure.

EYE CONTACT:

This product is a gas.

NOTES TO PHYSICIAN:

There is no specific antidote. Treatment of over-exposure should be directed at the control of symptoms and the clinical condition.

5. Fire Fighting Measures

FLAMMABLE :	No.	IF YES, UNDER WHAT CONDITIONS?	Not applicable.
FLASH POINT (test method)	Not applicable.	AUTOIGNITION TEMPERATURE	Not applicable.
FLAMMABLE LIMITS IN AIR, % by volume:	LOWER: Not applicable.	UPPER:	Not applicable.

EXTINGUISHING MEDIA:

This mixture cannot catch fire. Use media appropriate for surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES:

CAUTION! Evacuate all personnel to a safe distance. Immediately deluge containers with water spray from maximum distance until cool, then move containers away from fire area if without risk.

UNUSUAL FIRE AND EXPLOSION HAZARD:

Gas cannot catch fire. Container may rupture due to heat of fire. No part of a container should be subjected to a temperature higher than 52 C. Most containers are provided with a pressure relief device designed to vent contents when they are exposed to elevated temperature.

HAZARDOUS COMBUSTION PRODUCTS:

These products are carbon oxides (CO, CO₂), nitrogen oxides (NO, NO₂...).

SENSITIVITY TO IMPACT:

Avoid impact against container.

SENSITIVITY TO STATIC DISCHARGE:

Not applicable.

6. Accidental Release Measures**STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**

CAUTION! Evacuate all personnel from danger area. Use self-contained breathing apparatus where needed. Shut off flow if you can do so without risk. Ventilate area or move cylinder to a well-ventilated area. Test for sufficient oxygen, especially in confined spaces, before allowing reentry.

WASTE DISPOSAL METHOD:

Prevent waste from contaminating the surrounding environment. Keep personnel away. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, provincial, and local regulations. If necessary, call your local supplier for assistance.

7. Handling and Storage**PRECAUTIONS TO BE TAKEN IN STORAGE:**

Store and use with adequate ventilation. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Store only where temperature will not exceed 52 C. Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.

PRECAUTIONS TO BE TAKEN IN HANDLING:

Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Open valve slowly. If valve is hard to open, discontinue use and contact your supplier.

For additional information on storage and handling, refer to Compressed Gas Association (CGA) pamphlet P-1, *Safe Handling of Compressed Gases in Containers*, available from the CGA. Refer to Section 16 for the address and phone number along with a list of other available publications.

OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE:

High pressure gas. Use piping and equipment adequately designed to withstand pressures to be encountered. **Gas can cause rapid suffocation due to oxygen deficiency.** Store and use with adequate ventilation. Close valve after each use; keep closed even when empty. **Prevent reverse flow.** Reverse flow into cylinder may cause rupture. Use a check valve or other protective device in any line or piping from the cylinder. **Never work on a pressurized system.** If there is a leak, close the cylinder valve. Blow the system down in an environmentally safe manner in compliance with all federal, provincial, and local laws, then repair the leak. **Never place a compressed gas cylinder where it may become part of an electrical circuit.**

8. Exposure Controls/Personal Protection**VENTILATION/ENGINEERING CONTROLS:**

LOCAL EXHAUST: Preferred.

MECHANICAL (general): Acceptable.

SPECIAL: Not applicable.

OTHER: Not applicable.

PERSONAL PROTECTION:

RESPIRATORY PROTECTION: Wear appropriate respirator when ventilation is inadequate.

Select in accordance with provincial regulations, local bylaws or guidelines. Selection should also be based on the current CSA standard Z94.4, "Selection, Care and Use of Respirators". Respirators should also be approved by NIOSH and MSHA.

SKIN PROTECTION: Insulated Neoprene.

EYE PROTECTION: Wear safety glasses when handling cylinders.

Select in accordance with the current CSA standard Z94.3, "Industrial Eye and Face Protection", and any provincial regulations, local bylaws or guidelines.

OTHER PROTECTIVE EQUIPMENT: Metatarsal shoes for cylinder handling. Protective clothing where needed. Cuffless trousers should be worn outside the shoes. Select in accordance with the current CSA standard Z195, "Protective Foot Wear", and any provincial regulations, local bylaws or guidelines.

9. Physical and Chemical Properties

PHYSICAL STATE: Gas.	FREEZING POINT: Not available.	pH: Not available.
BOILING POINT Not available.	VAPOUR PRESSURE Not applicable.	MOLECULAR WEIGHT: Not applicable.
SPECIFIC GRAVITY: LIQUID (Water = 1) Not available.	SOLUBILITY IN WATER, Not available.	
SPECIFIC GRAVITY: VAPOUR (air = 1) Not available.	EVAPORATION RATE (Butyl Acetate=1): Not available.	COEFFICIENT OF WATER/OIL DISTRIBUTION: Not applicable.
VAPOUR DENSITY: Not available.	% VOLATILES BY VOLUME: Not available.	ODOUR THRESHOLD: Not available.
APPEARANCE & ODOUR: Colourless. Odourless.		

10. Stability and Reactivity

STABILITY:	The product is stable.
CONDITIONS OF CHEMICAL INSTABILITY:	See Section VII.
INCOMPATIBILITY (materials to avoid):	Alkali metals, alkline earth metals, metal acetylides, chromium, titanium above 550 C, uranium above 750 C.
HAZARDOUS DECOMPOSITION PRODUCTS:	In the presence of an electrical discharge, carbon dioxide is decomposed to form carbon monoxide and oxygen.
HAZARDOUS POLYMERIZATION:	Will not occur.
CONDITIONS OF REACTIVITY:	None currently known.

11. Toxicological Information

See section 3.

Carbon dioxide is an asphyxiant. It initially stimulates respiration and then causes respiratory depression. High concentrations result in narcosis. Symptoms in humans are as follows:

EFFECTS:

Breathing rate increases slightly.

Breathing rate increases to 50% above normal level. Prolonged exposure can cause headache, tiredness.

Breathing increases to twice normal rate and become labored. Weak narcotic effect. Impaired hearing, headache, increased blood pressure and pulse rate.

Breathing increases to approximately four times normal rate, symptoms of intoxication become evident, and slight choking may be felt.

Characteristic sharp odor noticeable. Very labored breathing, headache, visual impairment, and ringing in the ears. Judgment may be impaired, followed within minutes by loss of consciousness.

Unconsciousness occurs more rapidly above 10% level. Prolonged exposure to high concentrations may eventually result in death from asphyxiation.

**CO₂
CONCENTRATION:**

1%
2%
3%
4 - 5%
5 - 10%
50 - 100%

12. Ecological Information

No adverse ecological effects expected. This product does not contain any Class I or Class II ozone-depleting chemicals. The components of this mixture are not listed as marine pollutants by TDG Regulations.

13. Disposal Considerations

WASTE DISPOSAL METHOD: Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier.

14. Transport Information

TDG/IMO SHIPPING NAME: Compressed gas, n.o.s. (carbon dioxide)

HAZARD CLASS: CLASS 2.2 Non-flammable, non-corrosive and non-toxic gas

IDENTIFICATION #: UN1956

PRODUCT REPORTABLE QUANTITY (PRQ): Any accidental release in a quantity that could pose a danger to public safety or any sustained release of 10 minutes or more

SHIPPING LABEL(s): Non-flammable, non-corrosive and non-toxic gas

PLACARD (when required): Non-flammable, non-corrosive and non-toxic gas

SPECIAL SHIPPING INFORMATION:

Cylinders should be transported in a secure position, in a well-ventilated vehicle. Cylinders transported in an enclosed, non-ventilated compartment of a vehicle can present serious safety hazards.

15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, provincial, and local regulations.

DSL (Canada) This product is on the DSL list

WHMIS (Canada) CLASS A: Compressed gas.

International Regulations

EINECS Not available.

DSCL (EEC) This product is not classified according to the EU regulations.

International Lists No products were found.

16. Other Information

MIXTURES:

When two or more gases, or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist, or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

HAZARD RATING SYSTEM:

HMIS RATINGS:

HEALTH 0

FLAMMABILITY 0

PHYSICAL HAZARD 2

STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:

THREADED: CGA-580

PIN-INDEXED YOKE: Not available.

ULTRA-HIGH-INTEGRITY CONNECTION: Not available.

Use the proper CGA connections. **DO NOT USE ADAPTERS.** Additional limited-standard connections may apply. See CGA pamphlets V-1 and V-7 listed below.

Ask your supplier about free Praxair safety literature as referred to in this MSDS and on the label for this product. Further information about this product can be found in the following pamphlets published by the Compressed Gas Association, Inc. (CGA), 4221 Walney Road, 5th Floor, Chantilly, VA 20151-2923, Telephone (703) 788-2700, Fax (703) 961-1831, website: www.cganet.com.

- AV-1 Safe Handling and Storage of Compressed Gas
- P-1 Safe Handling of Compressed Gases in Containers
- P-14 Accident Prevention in Oxygen-Rich, Oxygen-Deficient Atmospheres
- SB-2 Oxygen-Deficient Atmospheres
- V-1 Compressed Gas Cylinder Valve Inlet and Outlet Connections
- V-7 Standard Method of Determining Cylinder Valve Outlet Connections for Industrial Gas Mixtures
- Handbook of Compressed Gases, Fifth Edition

For more indepth information for each component, refer to the pure product MSDS.

The information contained in this MSDS is generated from technical sources using the Chemmate Mixture MSDS system and the pure-product MSDS for each component. These mixtures are not tested as a whole for chemical, physical, or health effects.

Product Name: Stargon SS

MSDS# E-6212-E

Date: Oct. 15, 2013

PREPARATION INFORMATION:

DATE: October 15, 2013
DEPARTMENT: Safety and Environmental Services
TELEPHONE: 905-803-1600

The opinions expressed herein are those of qualified experts within Praxair Canada Inc. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of use of the product are not within the control of Praxair Canada Inc., it is the user's obligation to determine the conditions of safe use of the product.

Praxair Canada Inc. requests the users of this product to study this Material Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

Praxair and the *Flowing Airstream* design are trademarks of
Praxair Canada Inc.

Other trademarks used herein are trademarks or registered trademarks of their respective owners.



Praxair Canada Inc.
1 City Centre Drive
Suite 1200
Mississauga, ON L5B 1M2

Copyright © 2004, Praxair Canada Inc.

Page 7 of 7

Material Safety Data Sheet**TRAXON™ E SYNTHETIC CD-50**

000003000863



Version 2.0

Revision Date 2015/02/17

Print Date 2015/02/17

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : TRAXON™ E SYNTHETIC CD-50

Product code : TRE5P20, TRE5K60, TRE5DRM, TRE5, TRE5DCT

Manufacturer or supplier's details

Petro-Canada Lubricants Inc.
2310 Lakeshore Road West
Mississauga ON L5J 1K2
Canada

Emergency telephone number : Suncor Energy: +1 403-296-3000;
Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : A manual transmission fluid meeting API MT-1 for heavy duty applications. May be used where SAE 50 engine oil is recommended.

Prepared by : Product Safety: +1 905-804-4752

SECTION 2. HAZARDS IDENTIFICATION**Emergency Overview**

Appearance	viscous liquid
Colour	amber
Odour	Mild petroleum oil like.

Potential Health Effects

Primary Routes of Entry : Eye contact
Ingestion
Inhalation
Skin contact

Aggravated Medical Condition : None known.

Carcinogenicity:

IARC No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential

Material Safety Data Sheet

TRAXON™ E SYNTHETIC CD-50

000003000863

Version 2.0

Revision Date 2015/02/17

Print Date 2015/02/17



carcinogen by ACGIH.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

No hazardous ingredients

SECTION 4. FIRST AID MEASURES

- If inhaled : Move to fresh air.
Artificial respiration and/or oxygen may be necessary.
Seek medical advice.
- In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash skin thoroughly with soap and water or use recognized skin cleanser.
Wash clothing before reuse.
Seek medical advice.
- In case of eye contact : Remove contact lenses.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Obtain medical attention.
- If swallowed : Rinse mouth with water.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Never give anything by mouth to an unconscious person.
Seek medical advice.
- Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : No information available.
- Specific hazards during firefighting : Cool closed containers exposed to fire with water spray.

Material Safety Data Sheet

TRAXON™ E SYNTHETIC CD-50

000003000863



Version 2.0

Revision Date 2015/02/17

Print Date 2015/02/17

- Hazardous combustion products : Carbon oxides (CO, CO₂), nitrogen oxides (NO_x), sulphur oxides (SO_x), phosphorus oxides (PO_x), smoke and irritating vapours as products of incomplete combustion.
- Further information : Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Material can create slippery conditions.
- Environmental precautions : Do not allow uncontrolled discharge of product into the environment.
- Methods and materials for containment and cleaning up : Prevent further leakage or spillage if safe to do so.
Remove all sources of ignition.
Soak up with inert absorbent material.
Non-sparking tools should be used.
Ensure adequate ventilation.
Contact the proper local authorities.

SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Use only with adequate ventilation.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid contact with skin, eyes and clothing.
Do not ingest.
Keep away from heat and sources of ignition.
Keep container closed when not in use.
- Conditions for safe storage : Store in original container.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep in a dry, cool and well-ventilated place.
Keep in properly labelled containers.
To maintain product quality, do not store in heat or direct sunlight.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

- Engineering measures : No special ventilation requirements. Good general ventilation

Material Safety Data Sheet

TRAXON™ E SYNTHETIC CD-50

000003000863

Version 2.0

Revision Date 2015/02/17

Print Date 2015/02/17



should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

- Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Filter type : organic vapour filter
- Hand protection
Material : neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R).
- Remarks : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Eye protection : Wear face-shield and protective suit for abnormal processing problems.
- Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
- Protective measures : Wash contaminated clothing before re-use.
No special protective equipment required.
- Hygiene measures : Remove and wash contaminated clothing and gloves, including the inside, before re-use.
Wash face, hands and any exposed skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : viscous liquid
- Colour : amber
- Odour : Mild petroleum oil like.
- Odour Threshold : No data available
- pH : No data available
- Pour point : -45 °C (-49 °F) No data available
- Boiling point/boiling range : No data available
- Flash point : 221 °C (430 °F)
Method: Cleveland open cup
- Fire Point : No data available

Material Safety Data Sheet

TRAXON™ E SYNTHETIC CD-50

000003000863



Version 2.0

Revision Date 2015/02/17

Print Date 2015/02/17

Auto-Ignition Temperature	: No data available
Evaporation rate	: No data available
Flammability	: Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available
Density	: 0.86 kg/l (15 °C / 59 °F)
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: 132.0 cSt (40 °C / 104 °F) 17.5 cSt (100 °C / 212 °F)
Explosive properties	: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	: No data available
Incompatible materials	: Reactive with oxidising agents, acids and alkalis.
Hazardous decomposition products	: May release COx, NOx, SOx, POx, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	: Eye contact Ingestion Inhalation Skin contact
--	--

Acute toxicity

Product:

Material Safety Data Sheet

TRAXON™ E SYNTHETIC CD-50

000003000863



Version 2.0

Revision Date 2015/02/17

Print Date 2015/02/17

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

Skin corrosion/irritation

Product:

Remarks: No data available

Serious eye damage/eye irritation

Product:

Remarks: No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Aspiration toxicity

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

Material Safety Data Sheet

TRAXON™ E SYNTHETIC CD-50

000003000863



Version 2.0

Revision Date 2015/02/17

Print Date 2015/02/17

Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Offer surplus and non-recyclable solutions to a licensed disposal company.
Waste must be classified and labelled prior to recycling or disposal.
Send to a licensed waste management company.
Dispose of as hazardous waste in compliance with local and national regulations.
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulation

IATA-DGR

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

49 CFR

Not regulated as a dangerous good

TDG

Not regulated as a dangerous good

Special precautions for user

Not applicable

Material Safety Data Sheet

TRAXON™ E SYNTHETIC CD-50

000003000863



Version 2.0

Revision Date 2015/02/17

Print Date 2015/02/17

SECTION 15. REGULATORY INFORMATION

WHMIS Classification : Not Rated

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

The components of this product are reported in the following inventories:

DSL	On the inventory, or in compliance with the inventory
TSCA	All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.
EINECS	On the inventory, or in compliance with the inventory
IECSC	On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

MATERIAL SAFETY DATA SHEET**SECTION 1 — PRODUCT IDENTIFICATION**

Product identifier: 0357- Swish Toilet Bowl Cleaner
Product use: Toilet Bowl & Urinal cleaner.
Product Code Number: 63315, 63316
MSDS Number: 0357

WHMIS Classification: D1A, E

Supplier name and address:
 Swish Maintenance Limited
 2060 Fisher Dr.
 Peterborough, ON K9J 8N4
 (705) 740-2880

Manufacturer's name and address:
 Refer to Supplier

Emergency Telephone #: CANUTEC (613) 996-6666

SECTION 2 — CHEMICAL COMPOSITION/HAZARDOUS INGREDIENTS

<u>Ingredients</u>	<u>CAS #</u>	<u>% (weight)</u>	<u>LD₅₀</u>	<u>LD₅₀</u>	<u>LC₅₀</u>
			<u>mg/kg</u> <u>oral/rabbit</u>	<u>mg/kg</u> <u>skin/rabbit</u>	<u>ppm</u> <u>inh/mouse</u>
Hydrogen chloride	7647-01-0	15-40	900	n/av	1108 ppm/1H
Ethoxylated alcohol	68131-39-5	0.1-1	3200	n/av	n/av

SECTION 3 — HAZARDS IDENTIFICATION*****POTENTIAL HEALTH EFFECTS*****

Routes of entry: Inhalation, ingestion, skin and eye contact.

Emergency Overview: Danger! Extremely corrosive! Causes severe burns and eye damage.

Signs and symptoms of short-term (acute) exposure:

Inhalation: Extremely irritating and/or corrosive to the eyes, nose, throat and lungs. Harmful if inhaled.

Skin contact: Dangerous in case of skin contact. Causes tissue damage.

Eye contact: Contact can result in corneal damage or blindness. Immediate pain, severe burns.

Ingestion: Harmful or fatal if swallowed. May burn mouth, throat and stomach.

Effects of long-term (chronic) exposure: See Section 11. **Other important hazards:** None reported.

SECTION 4 — FIRST AID MEASURES

Inhalation: Remove victim to fresh air. If symptoms persist, call a physician.

Skin contact: Flush skin with plenty of water, for at least 15 minutes, while removing contaminated clothing. Call physician immediately. Wash contaminated clothing before reuse. Obtain medical attention.

Eye contact: IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Consult a doctor immediately.

Ingestion: Immediately call physician. DO NOT induce vomiting. Give several glasses of water. Never give anything by mouth if victim is unconscious or convulsing.

SECTION 5 — FIRE FIGHTING MEASURES

Fire hazards/conditions of flammability: Not flammable.

Flash point (Method): Not applicable. °C (°F)

Lower flammable limit (% by volume): n/ap

Upper flammable limit (% by volume): n/ap

Explosion data: *Sensitivity to mechanical impact:* Not sensitive. *Sensitivity to static discharge:* Not sensitive.

Oxidizing properties: None.

Auto-ignition temperature: None.

Suitable extinguishing media: As appropriate for burning of surrounding products.

Special fire-fighting procedures/equipment: n/ap

Hazardous combustion products: n/ap

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal precautions: Wear adequate personal protective equipment.

Environmental precautions: No special precautions required.

Spill response/Cleanup: Recover and reuse as much of the product as possible. Restrict access to area until completion of clean up. Ensure trained personnel conduct clean up. Do not touch spilled material.

Prohibited materials: None known.

SECTION 7 — HANDLING AND STORAGE

Safe handling procedures: Product is corrosive. Avoid contact with skin, eyes and clothing. Wear proper protective equipment, including rubber gloves.

Storage requirements: Store in a cool, dry area. Keep away from incompatible materials, (see Sect. 10)

Special packaging materials: Plastic or other corrosion resistant containers.

SECTION 8 — EXPOSURE CONTROLS AND PERSONAL PROTECTION

Ventilation and engineering controls: Mechanic ventilation should be adequate.

Respiratory protection: Normally a respirator is required.

Protective gloves: Butyl rubber, Neoprene, Viton. Not recommended – Polyvinyl alcohol.

Eye protection: Safety glasses, or chemical goggles.

Other protective equipment: As required by workplace standards.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Physical form, color and odor: Opaque white emulsion with pungent odour

Odor threshold: n/av

pH: <1

Boiling point: n/av

Melting/freezing point: n/av

Vapour pressure: n/av

Solubility in water: Very soluble.

Coefficient of oil/water distribution: Essentially zero.

Specific gravity or relative density (water = 1): 1.10-1.16

Vapour density: n/av

Volatile organic compounds (VOC's): n/ap

Evaporation rate: n/ap **Percent Volatile by Weight:** n/av **%HCl = 22.5-24%**

SECTION 10 — REACTIVITY AND STABILITY DATA

Stability and reactivity: Normally stable.

Conditions to avoid: Unintentional contact with water and moisture. Keep containers tightly closed, when not in use.

Materials to avoid: Strong bases, reactive metals. When diluting DO NOT add water to the acid. Add acid to water.

Hazardous decomposition products: Toxic chlorine fumes.

SECTION 11 — TOXICOLOGICAL INFORMATION

LD₅₀: Not established for this product. See Section 2 for values for ingredients.

LC₅₀: Not established for this product. See Section 2 for values for ingredients.

Exposure limits: ACGIH-TLV 5 ppm (Ceiling)

Carcinogenicity: None of the ingredients is listed by IARC, ACGIH, NTP, and OSHA as carcinogen.

Teratogenicity, mutagenicity, other reproductive effects: There is no human or animal information available on teratogenicity, reproductive toxicity, or mutagenicity.

Sensitization to material: Not reported.

Conditions aggravated by exposure: Skin conditions.

Synergistic materials: None known.

SECTION 12 — ECOLOGICAL INFORMATION

Environmental effects: Product is corrosive. Low pH (acidity) of material is harmful to aquatic life.

SECTION 13 — WASTE DISPOSAL

Handling for disposal: Reuse if possible.

Methods of disposal: Follow local, provincial, state and federal regulations.

SECTION 14 — TRANSPORTATION INFORMATION

Shipping description: TDG – Hydrochloric acid, Class 8, UN1789 P.G. II, Placard –8-Corrosive

Please note: This shipping description is of a general nature only. It does not consider package sizes, modes of transport and other specific circumstances. Appropriate regulations should be referenced, and handling for transportation of dangerous goods/hazardous materials should be performed by trained personnel only.

SECTION 15 — REGULATORY INFORMATION

WHMIS information: D1A, E

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and this MSDS contains all the information required by the CPR.

SECTION 16 — OTHER INFORMATION

Prepared by: Armstrong Manufacturing Inc.

Telephone number: (905) 566-1395

Preparation date: January 24, 2013

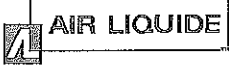
References:

1. ACGIH, Threshold Limit Values and Biological Exposure Indices for 2002.
2. International Agency for Research on Cancer Monographs, Supplement 7, 1988.
3. Canadian Centre for Occupational Health and Safety. CHEMINFO database.
4. Material Safety Data Sheets from raw materials suppliers.
5. N. Irving Sax. Dangerous Properties of Industrial Materials, Seventh Edition.

n/ap Not applicable

n/av Not available

MV/mt



Material Safety Data Sheet - MSDS

Section 1. Chemical Product and Company Identification

ALM WIRE

Product name Blueshield	Classification CSA: ER4043; ER5356; ER4047;	Classification AWS: ER4043; ER5356; ER4047;	
Description	: Aluminium Wire for GMAW (MIG).	Generic Code	: AL-J-012-0
In case of emergency	: 1-514-878-1667	Date of issue	: 01/13/2014
Supplier	: Air Liquide Canada Inc., 1250, René-Lévesque Ouest, Suite 1700, Montréal, QC H3B 5E6		

Section 2. Hazards Identification

Physical state and Appearance : Solid.

Emergency overview : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.

WARNING!
ELECTRIC SHOCK can kill.
FUMES AND GASES can be dangerous to your health.
ARC RAYS can injure eyes and burn skin.
MAY BE HARMFUL IF INHALED. MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
Use only with adequate ventilation. Do not eat, drink or smoke when using this product. Avoid contact with eyes, skin and clothing. Keep container tightly closed. Wash thoroughly after handling.

Routes of entry : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

Eyes : Hazardous by the following route of exposure: of eye contact (irritant). Inflammation of the eye is characterized by redness, watering and itching.

Skin : Hazardous by the following route of exposure: of skin contact (corrosive). Skin contact may produce burns.

Inhalation : Hazardous by the following route of exposure: of inhalation.

Ingestion : Since the product (welding fumes) is a gas and that it is mostly probable that it will be inhaled more than ingested, please consider first to look at the preventive measures in case of inhalation.

Potential chronic health effects :

Carcinogenicity
Not available.

Mutagenic effects Not available.
Teratogenic effects: Not available.

Medical conditions aggravated by over-exposure : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

(*) See Abbreviations (section 16).

Section 3. Composition, Information on Ingredients

Name	CAS #	% by weight	UN number
Aluminium	7429-90-5	87 - 98	UN1396
Silicon	7440-21-3	4 - 13	UN1346
Copper	7440-50-8	0.1 - 6	UN3077
magnesium	7439-95-4	0.1 - 5	Not available.
Manganese	7439-96-5	<1.5	Not available.
Chromium	7440-47-3	<0.5	Not available.

The fumes emitted by the electrodes, in use, are hazardous. This MSDS is written for workers using these electrodes.
See Section 8 for Exposure Limits of the oxides found in the welding fumes.



Section 4. First Aid Measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Section 5. Fire Fighting Measures

- Flammability of the product** : Non-flammable. Emits toxic fumes when heated.
- Explosibility** : Non-explosive in the presence of the following materials or conditions: open flames, sparks and static discharge, heat and shocks and mechanical impacts.
- Fire-fighting media and instructions** : Use an extinguishing agent suitable for the surrounding fire.

Section 6. Accidental Release Measures

- Small/Large Spill and Leak** : Use appropriate tools to transfer the spilled solid to a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Section 7. Handling and Storage

- Handling** : Avoid contact with eyes. Avoid breathing dust. Do not get on skin or clothing. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Avoid contact of spilled material and runoff with soil and surface waterways.
- Storage** : All filler metals in their original, unopened containers should be kept in a relatively dry storage area at temperatures between 15°C (60°F) and 30°C (80°F) and 50% maximum relative humidity.

Section 8. Exposure Controls, Personal Protection

- Engineering controls** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

- Eyes** : Safety glasses with side shields. Face shield with radiation shielding.
- Body** : Full suit. Fire resistant.
- Respiratory** : Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear a canister breathing apparatus (respirator) or a supplied-air respirator, when required, to weld in a confined space or when room exhaust or ventilation does not keep exposure below the acceptable values.
- Hands** : Gloves. Fire resistant.
- Feet** : Metal cap, safety boots.

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			Notations
Ingredient	List name	ppm	mg/m ³	Other	ppm	mg/m ³	Other	ppm	mg/m ³	Other	
Aluminium	US ACGIH 6/2013	-	1	-	-	-	-	-	-	-	[a]
	AB 4/2009	-	10	-	-	-	-	-	-	-	[3] [b]
	BC 7/2013	-	1	-	-	-	-	-	-	-	[c]
	ON 1/2013	-	1	-	-	-	-	-	-	-	[a]
Aluminium, as Al	QC 12/2012	-	10	-	-	-	-	-	-	-	[d]
	BC 7/2013	-	3	-	-	-	-	-	-	-	[e]
	BC 7/2013	-	10	-	-	-	-	-	-	-	[e]
	ON 1/2013	-	10	-	-	-	-	-	-	-	[e]
Copper, as Cu	QC 12/2012	-	10	-	-	-	-	-	-	-	[f]
	US ACGIH 6/2013	-	1	-	-	-	-	-	-	-	[g]
	US ACGIH 6/2013	-	0.2	-	-	-	-	-	-	-	[h]
	AB 4/2009	-	1	-	-	-	-	-	-	-	[i]
	BC 7/2013	-	0.2	-	-	-	-	-	-	-	[h]
Copper	ON 1/2013	-	1	-	-	-	-	-	-	-	[h]
	ON 1/2013	-	0.2	-	-	-	-	-	-	-	[h]
Copper, as Cu	ON 1/2013	-	1	-	-	-	-	-	-	-	[k]
	QC 12/2012	-	1	-	-	-	-	-	-	-	[l]
Manganese, as Mn	QC 12/2012	-	0.2	-	-	-	-	-	-	-	[m]
	US ACGIH 6/2013	-	0.1	-	-	-	-	-	-	-	[n]
	US ACGIH 6/2013	-	0.2	-	-	-	-	-	-	-	[a]
	AB 4/2009	-	0.2	-	-	-	-	-	-	-	[a]
	BC 7/2013	-	0.2	-	-	-	-	-	-	-	[a]
Chromium, measured as Cr	ON 1/2013	-	0.2	-	-	-	-	-	-	-	[a]
	QC 12/2012	-	1	-	-	3	-	-	-	-	[m]
	US ACGIH 6/2013	-	0.5	-	-	-	-	-	-	-	[o]
	AB 4/2009	-	0.5	-	-	-	-	-	-	-	[3]

Chromium	BC 7/2013	-	0.5	-	-	-	-	-	-	-	-	[o]
Chromium, as Cr	ON 1/2013	-	0.5	-	-	-	-	-	-	-	-	[o]
Chromium	QC 12/2012	-	0.5	-	-	-	-	-	-	-	-	[o]

[3]Skin sensitization

Form: [a]Respirable fraction [b]Metal Dust [c]Respirable [d]Respirable dust [e]Total dust [f]Total dust. [g]Dust and mist [h]Fume [i]Dusts and Mists [j]Dusts and mists [k]dust and mists [l]dusts & mists [m]fume [n]Inhalable fraction [o]Inorganic

Section 9. Physical and Chemical Properties

Physical state and Appearance : Solid.
 Color : Reddish-brown. Grayish-white.
 Odor : Odorless.
 Melting/freezing point : 1540 to 2030°C (2804 to 3686°F)
 Specific gravity : Not available.
 Solubility : Insoluble in the following materials: cold water and hot water.

Section 10. Stability and Reactivity

Stability and reactivity : The product is stable.
 Hazardous decomposition products : Metallic oxides. carbon oxides (CO, CO₂) Arc radiation can support the production of ozone and nitrogen oxides.
 Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological Information

Product/ingredient name	Result	Species	Dose	Exposure
Silicon	LD50 Oral	Rat	3160 mg/kg	-
Manganese	LD50 Oral	Rat	9 g/kg	-

Chronic effects and other toxic effects on humans : **CARCINOGENIC EFFECTS:** Classified A4 (Not classifiable for humans or animals.) by ACGIH [Aluminium]. Classified A4 (Not classifiable for humans or animals.) by ACGIH [Manganese]. Classified A4 (Not classifiable for humans or animals.) by ACGIH, 3 (Not classifiable for humans.) by IARC [Chromium].
 Contains material which may cause damage to the following organs: blood, kidneys, lungs, the nervous system, liver, gastrointestinal tract, upper respiratory tract, skin, eyes, central nervous system (CNS).

Hazardous by the following route of exposure: of skin contact (corrosive), of eye contact (Irritant), of inhalation.

Section 12. Ecological Information

Ecotoxicity data

Product/ingredient name	Result	Species	Exposure
Aluminium	Acute LC50 38000 µg/l	Daphnia - Daphnia magna	48 hours
	Acute LC50 120 µg/l Fresh water	Fish - Oncorhynchus mykiss - Embryo	96 hours
Copper	Chronic NOEC 9 mg/l Fresh water	Aquatic plants - Ceratophyllum demersum	3 days
	Acute EC50 1100 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute EC50 2.1 µg/l Fresh water	Daphnia - Daphnia longispina - Juvenile (Fledgling, Hatchling, Weanling)	48 hours
	Acute IC50 13 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata - Exponential growth phase	72 hours
	Acute IC50 5.4 mg/l Marine water	Aquatic plants - Plantae - Exponential growth phase	72 hours
	Acute LC50 0.072 µg/l Marine water	Crustaceans - Amphipoda - Adult	48 hours
	Acute LC50 7.56 µg/l Marine water	Fish - Periophthalmus waltoni - Adult	96 hours
	Chronic NOEC 2.5 µg/l Marine water	Algae - Nitzschia closterium - Exponential growth phase	72 hours
Manganese	Chronic NOEC 7 mg/l Fresh water	Aquatic plants - Ceratophyllum demersum	3 days
	Chronic NOEC 0.02 mg/l Fresh water	Crustaceans - Cambarus bartonii - Mature	21 days
	Chronic NOEC 2 µg/l Fresh water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 0.8 µg/l Fresh water	Fish - Oreochromis niloticus - Juvenile (Fledgling, Hatchling, Weanling)	6 weeks
	Acute EC50 31000 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 29000 µg/l	Daphnia - Daphnia magna	48 hours
	Acute LC50 28 mg/l Fresh water	Fish - Pimephales promelas	96 hours

Products of degradation : Not applicable.

Section 13. Disposal Considerations

Waste information : Waste must be disposed of in accordance with federal, state and local environmental control regulations. Recycle, if possible.
Consult your local or regional authorities.

Section 14. Transport Information

No transport class is found applicable to this product.

Section 15. Regulatory Information

HCS Classification : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Target organ effects

U.S. Federal regulations : TSCA 8(a) CDR Exempt/Partial exemption: Not determined
United States inventory (TSCA 8b): All components are listed or exempted.
SARA 302/304: No products were found.
SARA 311/312 Hazards identification: Delayed (chronic) health hazard
Clean Water Act (CWA) 307: Copper; Chromium

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Aluminium	7429-90-5	87 - 98
	Copper	7440-50-8	0.1 - 6
	Manganese	7439-96-5	<1.5
Supplier notification	Aluminium	7429-90-5	87 - 98
	Copper	7440-50-8	0.1 - 6
	Manganese	7439-96-5	<1.5

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations : **Massachusetts** : The following components are listed: ALUMINUM; SILICON DUST; MAGNESIUM; COPPER; MANGANESE
New York : The following components are listed: Copper
New Jersey : The following components are listed: ALUMINUM; SILICON; MAGNESIUM; COPPER; MANGANESE
Pennsylvania : The following components are listed: ALUMINUM; SILICON; MAGNESIUM; COPPER FUME; MANGANESE
None of the components are listed.

WHMIS (Canada) : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Class D-2B: Material causing other toxic effects (Toxic).
CEPA Toxic substances: None of the components are listed.
Canadian ARET: None of the components are listed.
Canadian NPRI: The following components are listed: Aluminum (fume or dust only); Copper (and its compounds); Manganese (and its compounds)
Alberta Designated Substances: None of the components are listed.
Ontario Designated Substances: None of the components are listed.
Quebec Designated Substances: None of the components are listed.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Section 16. Other Information

Label requirements : See Section 2.

Hazardous Material Information System (U.S.A.) : Health: 2* Fire: 0 Reactivity: 0

National Fire Protection Association (U.S.A.) : Health: 2 Fire: 0 Reactivity: 0 Other: None

References : - 29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. - CRC Handbook of chemistry and physics, 67th edition. CRC Press inc., Boca Raton, Florida. - Manufacturer's Material Safety Data Sheet. ANSI Z400.1, MSDS Standard, 2004. ANSI Z49.1 Safety in Welding and Cutting, The American Welding Society, P.O. Box 351040, Miami, FL 33135. Canadian Standard Association, CSA W117.2, Code for Safety in Welding and Cutting, 2003.

Abbreviations and acronyms : ACGIH: American Conference of Governmental Industrial Hygiene.
ACGIH-A1-Confirmed Human Carcinogen.
ACGIH-A2-Suspected Human Carcinogen.
ACGIH-A3-Animal Carcinogen.
ACGIH-A4-Not Classifiable as a Human Carcinogen.
ACGIH-A5-Not suspected as a Human Carcinogen.
IARC: International Agency for Research on Cancer.
IARC 1: Proven.
IARC 2A: Probable for human.

IARC 2B: Possible for human.
IARC 3: Not classifiable for human.
NIOSH: National Institute of Occupational Safety and Health.
NIOSH +: Proven.
NIOSH: None.
EU: European Union
Carc. 1A : May cause cancer (Known)
Carc. 1B : May cause cancer (Presumed)
Carc. 2 : Suspected of causing cancer
NTP: National Toxicology program.
NTP 1: Known to be human carcinogens.
NTP 2: Reasonably Anticipated to be human carcinogens.

Responsible name : IHS
Date of previous issue : 01/15/2011
Version : 5

Notice to reader

THE INFORMATION, RECOMMENDATIONS AND DATA CONTAINED IN THIS DOCUMENT ARE INTENDED TO BE USED BY PROPERLY TRAINED AND QUALIFIED PERSONNEL ONLY AND AT THEIR SOLE RISKS AND DISCRETION. THE INFORMATION, RECOMMENDATIONS AND DATA HEREIN CONTAINED ARE DERIVED FROM SOURCES WHICH WE BELIEVE TO BE RELIABLE. HOWEVER, AIR LIQUIDE CANADA INC. MAKES NO REPRESENTATION AND GIVES NO WARRANTY OF ANY KIND WHATSOEVER WITH RESPECT TO THEIR ACCURACY OR COMPLETENESS AND ASSUMES NO LIABILITY FOR DAMAGES OR LOSS ARISING DIRECTLY OR INDIRECTLY FROM THEIR USE, WHETHER PROPER OR IMPROPER.



Material Safety Data Sheet - MSDS

Section 1. Chemical Product and Company Identification

STL WIRE

Product name Blueshield	Classification CSA:	Classification AWS:	
LA C-3M; LA C-6; LA C-6 LF; LA C-6 CT; LA C-6 CR; LA C-6 LS; SAFDUAL; SAFDUAL 200;	- E491C-6-H4 / E491C-6M-H4; E491C-6-H4 / E491C-6M-H4 E491C-6-H4 / E491C-6M-H4 E491C-6-H4 / E491C-6M-H4 E492C-6-H4 / E492C-6M-H4	E70C-3M-H8; E70C-6M-H4; E70C-6M-H4; E70C-6M-H4; E70C-6M-H4; E70C-6M-H4; E70C-G-H4;	
Description	: MCAW - Carbon Steel Metal-Cored Wires.	Generic Code	: AL-T-002-0
In case of emergency	: 1-514-878-1667	Date of issue	: 01/13/2014
Supplier	: Air Liquide Canada Inc., 1250, René-Lévesque Ouest, Suite 1700, Montréal, QC H3B 5E6		

Section 2. Hazards Identification

Physical state and Appearance : Solid.

Emergency overview : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.

WARNING!

ELECTRIC SHOCK can kill.

FUMES AND GASES can be dangerous to your health.

ARC RAYS can injure eyes and burn skin.

MAY BE HARMFUL IF INHALED. CAUSES RESPIRATORY TRACT IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. SUSPECT CANCER HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE CANCER.

Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Use only with adequate ventilation. Do not eat, drink or smoke when using this product. Avoid contact with eyes, skin and clothing. Keep container tightly closed. Use personal protective equipment as required. Wash thoroughly after handling.

Routes of entry : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

Eyes : Hazardous by the following route of exposure: of eye contact (irritant). Inflammation of the eye is characterized by redness, watering and itching.

Skin : Hazardous by the following route of exposure: of skin contact (corrosive, sensitizer). Skin contact may produce burns.

Inhalation : Hazardous by the following route of exposure: of inhalation (lung irritant).

Ingestion : Since the product (welding fumes) is a gas and that it is mostly probable that it will be inhaled more than ingested, please consider first to look at the preventive measures in case of inhalation.

Potential chronic health effects :

Carcinogenicity

Product/ingredient name	ACGIH	OSHA	IARC	NTP	EU
nickel	A5	-	2B	Reasonably anticipated to be a human carcinogen.	Carc. 2, H351

Mutagenic effects Not available.

Teratogenic effects: Not available.

Medical conditions aggravated by over-exposure : Pre-existing skin disorders and disorders involving any other target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

(* See Abbreviations (section 16).

Section 3. Composition, Information on Ingredients

Name	CAS #	% by weight	UN number
Iron	7439-89-6	80 - 98	Not available.
Manganese	7439-96-5	1 - 4	Not available.
Nickel	7440-02-0	0.01 - 4	Not available.
Chromium	7440-47-3	0.01 - 3	Not available.
Silicon	7440-21-3	0.01 - 3	UN1346
Molybdenum	7439-98-7	0.01 - 2	Not regulated.

The fumes emitted by the electrodes, in use, are hazardous. This MSDS is written for workers using these electrodes.

See Section 8 for Exposure Limits of the oxides found in the welding fumes.

Section 4. First Aid Measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Section 5. Fire Fighting Measures

- Flammability of the product** : Non-flammable. Emits toxic fumes when heated.
- Explosibility** : Non-explosive in the presence of the following materials or conditions: open flames, sparks and static discharge, heat and shocks and mechanical impacts.
- Fire-fighting media and instructions** : Use an extinguishing agent suitable for the surrounding fire.

Section 6. Accidental Release Measures

- Small/Large Spill and Leak** : Use appropriate tools to transfer the spilled solid to a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Section 7. Handling and Storage

- Handling** : Avoid contact with eyes. Avoid breathing dust. Avoid prolonged or repeated contact with skin. Do not get on skin or clothing. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Avoid contact of spilled material and runoff with soil and surface waterways.
- Storage** : All filler metals in their original, unopened containers should be kept in a relatively dry storage area at temperatures between 15°C (60°F) and 30°C (80°F) and 50% maximum relative humidity.

Section 8. Exposure Controls, Personal Protection

- Engineering controls** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

- Eyes** : Safety glasses with side shields. Face shield with radiation shielding.
- Body** : Full suit. Fire resistant.
- Respiratory** : Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear a canister breathing apparatus (respirator) or a supplied-air respirator, when required, to weld in a confined space or when room exhaust or ventilation does not keep exposure below the acceptable values.
- Hands** : Gloves. Fire resistant.
- Feet** : Metal cap, safety boots.

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			Notations
Ingredient	List name	ppm	mg/m ³	Other	ppm	mg/m ³	Other	ppm	mg/m ³	Other	
Manganese, as Mn	US ACGIH 6/2013	-	0.1	-	-	-	-	-	-	-	[a]
	AB 4/2009	-	0.2	-	-	-	-	-	-	-	[b]
	BC 7/2013	-	0.2	-	-	-	-	-	-	-	
	ON 1/2013	-	0.2	-	-	-	-	-	-	-	
	QC 12/2012	-	1	-	-	3	-	-	-	-	[c]
Nickel	US ACGIH 6/2013	-	1.5	-	-	-	-	-	-	-	[a]
	AB 4/2009	-	1.5	-	-	-	-	-	-	-	
Nickel, as Ni	BC 7/2013	-	0.05	-	-	-	-	-	-	-	
	Nickel	ON 1/2013	-	1	-	-	-	-	-	-	[d]
Chromium, measured as Cr	QC 12/2012	-	1	-	-	-	-	-	-	-	
	US ACGIH 6/2013	-	0.5	-	-	-	-	-	-	-	[e]
	AB 4/2009	-	0.5	-	-	-	-	-	-	-	[3]
	BC 7/2013	-	0.5	-	-	-	-	-	-	-	
	ON 1/2013	-	0.5	-	-	-	-	-	-	-	[e]
Chromium, as Cr	QC 12/2012	-	0.5	-	-	-	-	-	-	-	
	BC 7/2013	-	3	-	-	-	-	-	-	-	[f]
	BC 7/2013	-	10	-	-	-	-	-	-	-	[g]
	ON 1/2013	-	10	-	-	-	-	-	-	-	[g]
	QC 12/2012	-	10	-	-	-	-	-	-	-	[h]
Molybdenum, as Mo	US ACGIH 6/2013	-	10	-	-	-	-	-	-	-	[a]
	US ACGIH 6/2013	-	3	-	-	-	-	-	-	-	[b]
	AB 4/2009	-	3	-	-	-	-	-	-	-	[i]
Molybdenum	BC 7/2013	-	10	-	-	-	-	-	-	-	[j]
	BC 7/2013	-	10	-	-	-	-	-	-	-	[j]
	BC 7/2013	-	3	-	-	-	-	-	-	-	[j]

Molybdenum, as Mo	ON 1/2013	-	10	-	-	-	-	-	-	[a]
	ON 1/2013	-	3	-	-	-	-	-	-	[b]
Iron	US ACGIH	-	10	-	-	-	-	-	-	[k]

[3]Skin sensitization

Form: [a]Inhalable fraction [b]Respirable fraction [c]fume [d]Inhalable fraction: means that size fraction of the airborne particulate deposited anywhere in the respiratory tract and collected during air sampling with a particle size-selective device that, (a) meets the ACGIH particle size-selective sampling criteria for airborne particulate matter; and (b) has the cut point of 100 µm at 50 per cent collection efficiency. [e]Inorganic [f]Respirable dust [g]Total dust [h]Total dust. [i]Respirable [j]Inhalable [k]Inhalable particle.

Section 9. Physical and Chemical Properties

Physical state and Appearance	: Solid.
Color	: Bluish-grey.
Odor	: Odorless.
Melting/freezing point	: 1540°C (2804°F)
Specific gravity	: Weighted average: 7.54 [Water = 1]
Solubility	: Insoluble in the following materials: cold water and hot water.

Section 10. Stability and Reactivity

Stability and reactivity	: The product is stable.
Hazardous decomposition products	: Metallic oxides. carbon oxides (CO, CO ₂) Arc radiation can support the production of ozone and nitrogen oxides.
Hazardous polymerization	: Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological Information

Product/ingredient name	Result	Species	Dose	Exposure
Manganese	LD50 Oral	Rat	9 g/kg	-
Silicon	LD50 Oral	Rat	3160 mg/kg	-

Chronic effects and other toxic effects on humans : **CARCINOGENIC EFFECTS:** Classified A4 (Not classifiable for humans or animals.) by ACGIH [Manganese]. Classified + (Proven.) by NIOSH [Nickel]. Classified 2B (Possible for humans.) by IARC, 3 (Possible for humans.) by European Union [Nickel]. Classified 2 (Reasonably anticipated to be human carcinogens.) by NTP [Nickel]. Classified A5 (Not suspected for humans.) by ACGIH [Nickel]. Classified A4 (Not classifiable for humans or animals.) by ACGIH, 3 (Not classifiable for humans.) by IARC [Chromium].
Contains material which may cause damage to the following organs: blood, kidneys, lungs, the nervous system, liver, upper respiratory tract, skin, eyes, central nervous system (CNS), nose/sinuses.

Hazardous by the following route of exposure: of skin contact (corrosive, sensitizer), of eye contact (irritant), of inhalation (lung irritant).

Section 12. Ecological Information

Ecotoxicity data

Product/ingredient name	Result	Species	Exposure
Iron	Acute EC50 3700 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 33000 to 100000 µg/l Marine water	Crustaceans - Crangon crangon	48 hours
	Acute LC50 6.48 µg/l Marine water	Fish - Periophthalmus waltoni - Adult	96 hours
	Chronic NOEC 100 mg/l Marine water	Algae - Glenodinium halli	72 hours
Manganese	Acute EC50 31000 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 29000 µg/l	Daphnia - Daphnia magna	48 hours
	Acute LC50 28 mg/l Fresh water	Fish - Pimephales promelas	96 hours
	Acute EC50 2 ppm Marine water	Algae - Macrocystis pyrifera - Young	4 days
Nickel	Acute EC50 450 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute EC50 1000 µg/l Marine water	Daphnia - Daphnia magna	48 hours
	Acute IC50 0.31 mg/l Marine water	Crustaceans - Americamysis bahia - Juvenile (Fledgling, Hatchling, Weanling)	48 hours
	Acute LC50 47.5 ng/l Fresh water	Fish - Heteropneustes fossilis	96 hours
Chromium	Chronic NOEC 100 mg/l Marine water	Algae - Glenodinium halli	72 hours
	Chronic NOEC 3.5 µg/l Fresh water	Fish - Cyprinus carpio	4 weeks
	Acute EC50 0.2 ppm Marine water	Algae - Bacillariophyta	72 hours
	Acute EC50 5 ppm Marine water	Algae - Macrocystis pyrifera - Young	4 days
Molybdenum	Acute EC50 35000 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 45 µg/l Fresh water	Crustaceans - Ceriodaphnia reticulata	48 hours
	Acute LC50 22 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 13.9 ppm Fresh water	Fish - Anguilla rostrata	96 hours
Molybdenum	Chronic NOEC 50 mg/l Marine water	Algae - Glenodinium halli	72 hours
	Chronic NOEC 0.19 µg/l Fresh water	Fish - Cyprinus carpio	4 weeks
	Acute LC50 200000 µg/l	Daphnia - Daphnia magna	48 hours
	Acute LC50 800 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
Chronic NOEC 500 mg/l Marine water	Algae - Glenodinium halli	72 hours	

Products of degradation : Not applicable.

Section 13. Disposal Considerations

Waste information : Waste must be disposed of in accordance with federal, state and local environmental control regulations. Recycle, if possible.
Consult your local or regional authorities.

Section 14. Transport Information

No transport class is found applicable to this product.

Section 15. Regulatory Information

HCS Classification : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Irritating material
Sensitizing material
Carcinogen
Target organ effects

U.S. Federal regulations : TSCA 8(a) CDR Exempt/Partial exemption: Not determined
United States inventory (TSCA 8b): All components are listed or exempted.
SARA 302/304: No products were found.
SARA 311/312 Hazards identification: Immediate (acute) health hazard, Delayed (chronic) health hazard
Clean Water Act (CWA) 307: Nickel; Chromium; Copper

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Manganese	7439-96-5	1 - 4
	Nickel	7440-02-0	0.01 - 4
	Chromium	7440-47-3	0.01 - 3
Supplier notification	Manganese	7439-96-5	1 - 4
	Nickel	7440-02-0	0.01 - 4
	Chromium	7440-47-3	0.01 - 3

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations : Massachusetts : The following components are listed: MANGANESE; NICKEL; CHROMIUM; SILICON DUST; MOLYBDENUM
New York : The following components are listed: Nickel; Chromium
New Jersey : The following components are listed: MANGANESE; NICKEL; CHROMIUM; SILICON; MOLYBDENUM
Pennsylvania : The following components are listed: MANGANESE; NICKEL; CHROMIUM; SILICON; MOLYBDENUM

WARNING: This product contains a chemical known to the State of California to cause cancer.

WHMIS (Canada) : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).
CEPA Toxic substances: None of the components are listed.
Canadian ARET: None of the components are listed.
Canadian NPRI: The following components are listed: Manganese (and its compounds); Nickel (and its compounds); Chromium (and its compounds)
Alberta Designated Substances: None of the components are listed.
Ontario Designated Substances: None of the components are listed.
Quebec Designated Substances: None of the components are listed.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Section 16. Other Information

Label requirements : See Section 2.

Hazardous Material Information System (U.S.A.) : Health: 2* Fire: 0 Reactivity: 0

National Fire Protection Association (U.S.A.) : Health: 2 Fire: 0 Reactivity: 0 Other: None

References : - 29CFR Part 1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. - CRC Handbook of chemistry and physics, 67th edition. CRC Press Inc., Boca Raton, Florida. - Manufacturer's Material Safety Data Sheet. ANSI Z400.1, MSDS Standard, 2004. ANSI Z49.1 Safety in Welding and Cutting, The American Welding Society, P.O. Box 351040, Miami, FL 33135. Canadian Standard Association, CSA W117.2, Code for Safety in Welding and Cutting, 2003.

Abbreviations and acronyms : ACGIH: American Conference of Governmental Industrial Hygiene.
ACGIH-A1-Confirmed Human Carcinogen.
ACGIH-A2-Suspected Human Carcinogen.
ACGIH-A3-Animal Carcinogen.
ACGIH-A4-Not Classifiable as a Human Carcinogen.
ACGIH-A5-Not suspected as a Human Carcinogen.
IARC: International Agency for Research on Cancer.
IARC 1: Proven.
IARC 2A: Probable for human.
IARC 2B: Possible for human.
IARC 3: Not classifiable for human.
NIOSH: National Institute of Occupational Safety and Health.
NIOSH +: Proven.
NIOSH: None.
EU: European Union
Carc. 1A : May cause cancer (Known)
Carc. 1B : May cause cancer (Presumed)
Carc. 2 : Suspected of causing cancer
NTP: National Toxicology program.
NTP 1: Known to be human carcinogens.
NTP 2: Reasonably Anticipated to be human carcinogens.

Responsible name : IHS
Date of previous issue : 01/15/2011
Version : 5

Notice to reader

THE INFORMATION, RECOMMENDATIONS AND DATA CONTAINED IN THIS DOCUMENT ARE INTENDED TO BE USED BY PROPERLY TRAINED AND QUALIFIED PERSONNEL ONLY AND AT THEIR SOLE RISKS AND DISCRETION. THE INFORMATION, RECOMMENDATIONS AND DATA HEREIN CONTAINED ARE DERIVED FROM SOURCES WHICH WE BELIEVE TO BE RELIABLE. HOWEVER, AIR LIQUIDE CANADA INC. MAKES NO REPRESENTATION AND GIVES NO WARRANTY OF ANY KIND WHATSOEVER WITH RESPECT TO THEIR ACCURACY OR COMPLETENESS AND ASSUMES NO LIABILITY FOR DAMAGES OR LOSS ARISING DIRECTLY OR INDIRECTLY FROM THEIR USE, WHETHER PROPER OR IMPROPER.



Material Safety Data Sheet - MSDS

Section 1. Chemical Product and Company Identification

STL WIRE

Product name Blueshield	Classification CSA:	Classification AWS:
LA S-3/LA HI TENSILE; STRAIGHT WELD LA S-3;	ER480S-3/ ER49S-3; ER480S-3/ ER49S-3;	ER70S-3; ER70S-3;
LA S-6/LA 75G; STRAIGHT WELD LA S-6;	ER480S-6/ ER49S-6; ER480S-6/ ER49S-6;	ER70S-6; ER70S-6;
Description	: GMAW - Carbon Steel Solid Wires.	Generic Code : AL-T-007-0
In case of emergency	: 1-514-878-1667	Date of issue : 01/13/2014
Supplier	: Air Liquide Canada Inc., 1250, René-Lévesque Ouest, Suite 1700, Montréal, QC H3B 5E6	

Section 2. Hazards Identification

Physical state and Appearance : Solid.

Emergency overview : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.

WARNING!

ELECTRIC SHOCK can kill.

FUMES AND GASES can be dangerous to your health.

ARC RAYS can injure eyes and burn skin.

MAY BE HARMFUL IF INHALED. MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

Use only with adequate ventilation. Do not eat, drink or smoke when using this product. Avoid contact with eyes, skin and clothing. Keep container tightly closed. Wash thoroughly after handling.

Routes of entry : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

- Eyes** : Hazardous by the following route of exposure: of eye contact (irritant). Inflammation of the eye is characterized by redness, watering and itching.
- Skin** : Hazardous by the following route of exposure: of skin contact (corrosive). Skin contact may produce burns.
- Inhalation** : Hazardous by the following route of exposure: of inhalation.
- Ingestion** : Since the product (welding fumes) is a gas and that it is mostly probable that it will be inhaled more than ingested, please consider first to look at the preventive measures in case of inhalation.

Potential chronic health effects :

Carcinogenicity

Not available.

Mutagenic effects Not available.

Teratogenic effects: Not available.

Medical conditions aggravated by over-exposure : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

(*) See Abbreviations (section 16).

Section 3. Composition, Information on Ingredients

Name	CAS #	% by weight	UN number
Iron	7439-89-6	95 - 100	Not available.
Manganese	7439-96-5	0.9 - 1.85	Not available.

The fumes emitted by the electrodes, in use, are hazardous. This MSDS is written for workers using these electrodes.

See Section 8 for Exposure Limits of the oxides found in the welding fumes.

Section 4. First Aid Measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.



Section 5. Fire Fighting Measures

- Flammability of the product : Non-flammable. Emits toxic fumes when heated.
- Explosibility : Non-explosive in the presence of the following materials or conditions: open flames, sparks and static discharge, heat and shocks and mechanical impacts.
- Fire-fighting media and instructions : Use an extinguishing agent suitable for the surrounding fire.

Section 6. Accidental Release Measures

- Small/Large Spill and Leak : Use appropriate tools to transfer the spilled solid to a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Section 7. Handling and Storage

- Handling : Avoid contact with eyes. Avoid breathing dust. Do not get on skin or clothing. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Avoid contact of spilled material and runoff with soil and surface waterways.
- Storage : All filler metals in their original, unopened containers should be kept in a relatively dry storage area at temperatures between 15°C (60°F) and 30°C (80°F) and 50% maximum relative humidity.

Section 8. Exposure Controls, Personal Protection

- Engineering controls : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

- Eyes : Safety glasses with side shields. Face shield with radiation shielding.
- Body : Full suit. Fire resistant.
- Respiratory : Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear a canister breathing apparatus (respirator) or a supplied-air respirator, when required, to weld in a confined space or when room exhaust or ventilation does not keep exposure below the acceptable values.
- Hands : Gloves. Fire resistant.
- Feet : Metal cap, safety boots.

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			Notations
Ingredient	List name	ppm	mg/m ³	Other	ppm	mg/m ³	Other	ppm	mg/m ³	Other	
Manganese, as Mn	US ACGIH 6/2013	-	0.1	-	-	-	-	-	-	-	[a]
	AB 4/2009	-	0.2	-	-	-	-	-	-	-	[b]
	BC 7/2013	-	0.2	-	-	-	-	-	-	-	
	ON 1/2013	-	0.2	-	-	-	-	-	-	-	
	QC 12/2012	-	1	-	-	3	-	-	-	-	[c]
Iron	US ACGIH	-	10	-	-	-	-	-	-	-	[d]

Form: [a]Inhalable fraction [b]Respirable fraction [c]fume [d]inhalable particle.

Section 9. Physical and Chemical Properties

- Physical state and Appearance : Solid.
- Color : Reddish-brown. Grayish-white.
- Odor : Odorless.
- Melting/freezing point : 1540 to 2030°C (2804 to 3686°F)
- Specific gravity : Only known value: 7.8 (Water = 1) (iron)
- Solubility : Insoluble in the following materials: cold water and hot water.

Section 10. Stability and Reactivity

- Stability and reactivity : The product is stable.
- Hazardous decomposition products : Metallic oxides. carbon oxides (CO, CO₂) Arc radiation can support the production of ozone and nitrogen oxides.
- Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological Information

Product/ingredient name	Result	Species	Dose	Exposure
Manganese	LD50 Oral	Rat	9 g/kg	-

Chronic effects and other toxic effects on humans : **CARCINOGENIC EFFECTS:** Classified A4 (Not classifiable for humans or animals.) by ACGIH [Manganese]. Contains material which may cause damage to the following organs: blood, kidneys, lungs, the nervous system, upper respiratory tract, central nervous system (CNS).

Hazardous by the following route of exposure: of skin contact (corrosive), of eye contact (irritant), of inhalation.

Section 12. Ecological Information

Ecotoxicity data

Product/ingredient name	Result	Species	Exposure
Iron	Acute EC50 3700 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 33000 to 100000 µg/l Marine water	Crustaceans - Crangon crangon	48 hours
Manganese	Acute LC50 6.48 µg/l Marine water	Fish - Periophthalmus waltoni - Adult	96 hours
	Chronic NOEC 100 mg/l Marine water	Algae - Glenodinium halli	72 hours
	Acute EC50 31000 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 29000 µg/l	Daphnia - Daphnia magna	48 hours
	Acute LC50 28 mg/l Fresh water	Fish - Pimephales promelas	96 hours

Products of degradation : Not applicable.

Section 13. Disposal Considerations

Waste information : Waste must be disposed of in accordance with federal, state and local environmental control regulations. Recycle, if possible. Consult your local or regional authorities.

Section 14. Transport Information

No transport class is found applicable to this product.

Section 15. Regulatory Information

HCS Classification : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Target organ effects

U.S. Federal regulations : TSCA 8(a) CDR Exempt/Partial exemption: Not determined
United States inventory (TSCA 8b): All components are listed or exempted.
SARA 302/304: No products were found.
SARA 311/312 Hazards identification: Delayed (chronic) health hazard
Clean Water Act (CWA) 307: Copper

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Manganese	7439-96-5	0.9 - 1.85
Supplier notification	Manganese	7439-96-5	0.9 - 1.85

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations : **Massachusetts** : The following components are listed: MANGANESE
New York : None of the components are listed.
New Jersey : The following components are listed: MANGANESE
Pennsylvania : The following components are listed: MANGANESE
None of the components are listed.

WHMIS (Canada) : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).
CEPA Toxic substances: None of the components are listed.
Canadian ARET: None of the components are listed.
Canadian NPRI: The following components are listed: Manganese (and its compounds)
Alberta Designated Substances: None of the components are listed.
Ontario Designated Substances: None of the components are listed.
Quebec Designated Substances: None of the components are listed.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Section 16. Other Information

Label requirements : See Section 2.

Hazardous Material Information System (U.S.A.) : Health: 2* Fire: 0 Reactivity: 0

National Fire Protection Association (U.S.A.) : Health: 2 Fire: 0 Reactivity: 0 Other: None

References : - 29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. - CRC Handbook of chemistry and physics, 67th edition. CRC Press inc., Boca Raton, Florida. - Manufacturer's Material Safety Data Sheet. ANSI Z400.1, MSDS Standard, 2004. ANSI Z49.1 Safety in Welding and Cutting, The American Welding Society, P.O. Box 351040, Miami, FL 33135. Canadian Standard Association, CSA W117.2, Code for Safety in Welding and Cutting, 2003.

Abbreviations and acronyms : **ACGIH: American Conference of Governmental Industrial Hygiene.**

ACGIH-A1-Confirmed Human Carcinogen.

ACGIH-A2-Suspected Human Carcinogen.

ACGIH-A3-Animal Carcinogen.

ACGIH-A4-Not Classifiable as a Human Carcinogen.

ACGIH-A5-Not suspected as a Human Carcinogen.

IARC: International Agency for Research on Cancer.

IARC 1: Proven.

IARC 2A: Probable for human.

IARC 2B: Possible for human.

IARC 3: Not classifiable for human.

NIOSH: National Institute of Occupational Safety and Health.

NIOSH +: Proven.

NIOSH: None.

EU: European Union

Carc. 1A : May cause cancer (Known)

Carc. 1B : May cause cancer (Presumed)

Carc. 2 : Suspected of causing cancer

NTP: National Toxicology program.

NTP 1: Known to be human carcinogens.

NTP 2: Reasonably Anticipated to be human carcinogens.

Responsible name : IHS

Date of previous issue : 01/15/2011

Version : 5

Notice to reader

THE INFORMATION, RECOMMENDATIONS AND DATA CONTAINED IN THIS DOCUMENT ARE INTENDED TO BE USED BY PROPERLY TRAINED AND QUALIFIED PERSONNEL ONLY AND AT THEIR SOLE RISKS AND DISCRETION. THE INFORMATION, RECOMMENDATIONS AND DATA HEREIN CONTAINED ARE DERIVED FROM SOURCES WHICH WE BELIEVE TO BE RELIABLE. HOWEVER, AIR LIQUIDE CANADA INC. MAKES NO REPRESENTATION AND GIVES NO WARRANTY OF ANY KIND WHATSOEVER WITH RESPECT TO THEIR ACCURACY OR COMPLETENESS AND ASSUMES NO LIABILITY FOR DAMAGES OR LOSS ARISING DIRECTLY OR INDIRECTLY FROM THEIR USE, WHETHER PROPER OR IMPROPER.

Section 1. Chemical Product and Company Identification

Product name	Classification	Classification
AL-731	GSA:	AWS:
Description	: Nozzle gel for MIG gun nozzles	Generic Code : ALG902
In case of emergency	: 1-514-878-1667	Date of issue : 01/10/2014
Supplier	: Air Liquide Canada Inc., 1250, René-Lévesque Ouest, Suite 1700, Montréal, QC H3B 5E6	

Section 2. Hazards Identification

Physical state and Appearance : Solid. [Gel.]

Emergency overview : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.

WARNING!
ELECTRIC SHOCK can kill.
FUMES AND GASES can be dangerous to your health.
ARC RAYS can injure eyes and burn skin.
NOT EXPECTED TO PRODUCE SIGNIFICANT ADVERSE HEALTH EFFECTS WHEN THE RECOMMENDED INSTRUCTIONS FOR USE ARE FOLLOWED.

Routes of entry : Dermal contact.

Potential acute health effects

- Eyes : Slightly hazardous by the following route of exposure: of eye contact (irritant).
- Skin : Slightly hazardous by the following route of exposure: of skin contact (irritant).
- Inhalation : Non-hazardous in case of inhalation.
- Ingestion : Since the product (welding fumes) is a gas and that it is mostly probable that it will be inhaled more than ingested, please consider first to look at the preventive measures in case of inhalation.

Potential chronic health effects :

Carcinogenicity

Not available.

Mutagenic effects Not available.

Teratogenic effects: Not available.

Medical conditions aggravated by over-exposure : None known.

(*) See Abbreviations (section 16).

Section 3. Composition, Information on Ingredients

Name	CAS #	% by weight	UN number
------	-------	-------------	-----------

No hazardous ingredient.

The fumes emitted by the electrodes, in use, are hazardous. This MSDS is written for workers using these electrodes.

Section 4. First Aid Measures

- Eye contact : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention if symptoms occur.
- Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.
- Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms occur.
- Ingestion : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

Section 5. Fire Fighting Measures

Flammability of the product : Non-flammable.
Explosibility : Not considered to be a product presenting a risk of explosion.

Fire-fighting media and instructions : Use an extinguishing agent suitable for the surrounding fire.

Section 6. Accidental Release Measures

Small/Large Spill and Leak : Use appropriate tools to transfer the spilled solid to a convenient waste disposal container.

Section 7. Handling and Storage

Handling : Avoid breathing dust.
Storage : Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls, Personal Protection

Engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protection

Eyes : Safety glasses with side shields. Face shield with radiation shielding.
Body : Full suit. Fire resistant.
Respiratory : Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear a canister breathing apparatus (respirator) or a supplied-air respirator, when required, to weld in a confined space or when room exhaust or ventilation does not keep exposure below the acceptable values.
Hands : Gloves. Fire resistant.
Feet : Metal cap, safety boots.

Occupational exposure limits

No exposure limit value known.

Section 9. Physical and Chemical Properties

Physical state and Appearance : Solid. [Gel.]
Color : Blue.
Odor : Odorless.
Melting/freezing point : 68 to 77°C (154.4 to 170.6°F)
Specific gravity : 0.815 to 0.88 [Water = 1]
Solubility : Insoluble in the following materials: cold water and hot water.

Section 10. Stability and Reactivity

Stability and reactivity : The product is stable.
Hazardous decomposition products : Metallic oxides. carbon oxides (CO, CO₂) Arc radiation can support the production of ozone and nitrogen oxides.
Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological Information

Chronic effects and other toxic effects on humans : Not available.
Slightly hazardous by the following route of exposure: of skin contact (irritant), of eye contact (irritant).
Non-hazardous in case of inhalation.

Section 12. Ecological Information

Ecotoxicity data
Products of degradation : carbon oxides (CO, CO₂) and water

Section 13. Disposal Considerations

Waste information : Waste must be disposed of in accordance with federal, state and local environmental control regulations. Recycle, if possible.
Consult your local or regional authorities.

Section 14. Transport Information

No transport class is found applicable to this product.

Section 15. Regulatory Information

- HCS Classification** : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Not regulated.
- U.S. Federal regulations** : **TSCA 8(a) CDR Exempt/Partial exemption:** All components are listed or exempted.
United States inventory (TSCA 8b): All components are listed or exempted.
SARA 302/304: No products were found.
SARA 311/312 Hazards identification: Not regulated.
- State regulations** : **Massachusetts** : None of the components are listed.
New York : None of the components are listed.
New Jersey : None of the components are listed.
Pennsylvania : None of the components are listed.
None of the components are listed.
- WHMIS (Canada)** : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Not controlled under WHMIS (Canada).
CEPA Toxic substances: None of the components are listed.
Canadian ARET: None of the components are listed.
Canadian NPRI: None of the components are listed.
Alberta Designated Substances: None of the components are listed.
Ontario Designated Substances: None of the components are listed.
Quebec Designated Substances: None of the components are listed.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Section 16. Other Information

- Label requirements** : See Section 2.
- Hazardous Material Information System (U.S.A.)** : Health: 1 Fire: 0 Reactivity: 0
- National Fire Protection Association (U.S.A.)** : Health: 1 Fire: 0 Reactivity: 0 Other: None
- References** : - 29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. - CRC Handbook of chemistry and physics, 67th edition. CRC Press inc., Boca Raton, Florida. - Manufacturer's Material Safety Data Sheet. ANSI Z400.1, MSDS Standard, 2004. ANSI Z49.1 Safety in Welding and Cutting, The American Welding Society, P.O. Box 351040, Miami, FL 33135. Canadian Standard Association, CSA W117.2, Code for Safety in Welding and Cutting, 2003.
- Abbreviations and acronyms** : **ACGIH: American Conference of Governmental Industrial Hygiene.**
ACGIH-A1-Confirmed Human Carcinogen.
ACGIH-A2-Suspected Human Carcinogen.
ACGIH-A3-Animal Carcinogen.
ACGIH-A4-Not Classifiable as a Human Carcinogen.
ACGIH-A5-Not suspected as a Human Carcinogen.
IARC: International Agency for Research on Cancer.
IARC 1: Proven.
IARC 2A: Probable for human.
IARC 2B: Possible for human.
IARC 3: Not classifiable for human.
NIOSH: National Institute of Occupational Safety and Health.
NIOSH +: Proven.
NIOSH: None.
EU: European Union
Carc. 1A : May cause cancer (Known)
Carc. 1B : May cause cancer (Presumed)
Carc. 2 : Suspected of causing cancer
NTP: National Toxicology program.
NTP 1: Known to be human carcinogens.
NTP 2: Reasonably Anticipated to be human carcinogens.
- Responsible name** : IHS
- Date of previous issue** : 01/15/2011
- Version** : 6
- Notice to reader**

THE INFORMATION, RECOMMENDATIONS AND DATA CONTAINED IN THIS DOCUMENT ARE INTENDED TO BE USED BY PROPERLY TRAINED AND QUALIFIED PERSONNEL ONLY AND AT THEIR SOLE RISKS AND DISCRETION. THE INFORMATION, RECOMMENDATIONS AND DATA HEREIN CONTAINED ARE DERIVED FROM SOURCES WHICH WE BELIEVE TO BE RELIABLE. HOWEVER, AIR LIQUIDE CANADA INC. MAKES NO REPRESENTATION AND GIVES NO WARRANTY OF ANY KIND WHATSOEVER WITH RESPECT TO THEIR ACCURACY OR COMPLETENESS AND ASSUMES NO LIABILITY FOR DAMAGES OR LOSS ARISING DIRECTLY OR INDIRECTLY FROM THEIR USE, WHETHER PROPER OR IMPROPER.

1. Product and company identification

Product name Hysol MB 50
MSDS # 465450
Historic MSDS #: 03117-BE
Code 465450-US03
Product use Metalworking fluid - soluble.
 For specific application advice see appropriate Technical Data Sheet or consult our company representative.
Manufacturer Castrol Industrial North America, Inc.
 150 W. Warrenville Road
 Naperville, IL 60563
Supplier Wakefield Canada, Limited
 3620 Lakeshore Blvd West
 Toronto, Ontario, Canada
 M8W 1P2
 Castrol Industrial North America, Inc.
 150 W. Warrenville Road
 Naperville, IL 60563
 Product Information: +1-877-641-1600
EMERGENCY SPILL INFORMATION: 1 (613) 996-6666 CANUTEC (Canada)
 1 (703) 527-3887 CHEMTREC (USA)

2. Hazards identification

Physical state Liquid.
Color Yellow. [Light]
Emergency overview WARNING I
 CAUSES EYE AND SKIN IRRITATION.
 MAY CAUSE RESPIRATORY TRACT IRRITATION.
 Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis. In accordance with good industrial hygiene and safety work practices, airborne exposures should be controlled to the lowest extent practicable. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.
Routes of entry Dermal contact. Eye contact. Inhalation.
Potential health effects
Eyes Causes eye irritation.
Skin Causes skin irritation. Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis.
Inhalation May cause respiratory tract irritation.
Ingestion Ingestion may cause gastrointestinal irritation and diarrhea.

See toxicological information (Section 11)

3. Composition/information on ingredients

ingredient name	CAS #	%
Base oil - highly refined	Varies	45 - 50
Amine neutralized carboxylic acids	Not available.	10 - 15
Amine neutralised phosphoric acid esters	Not available.	1 - 5
2-Amino-2-methylpropanol	124-68-5	1 - 5
Triethanolamine	102-71-6	1 - 5
Boric acid	10043-35-3	0.1 - 1

4. First aid measures

Eye contact	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Skin contact	Immediately wash exposed skin with soap and water. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention.
Inhalation	If inhaled, remove to fresh air. Get medical attention if symptoms occur.
Ingestion	Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If potentially dangerous quantities of this material have been swallowed, call a physician immediately. Get medical attention if symptoms occur.

5. Fire-fighting measures

Flash point	Water content interferes with flash point determination.
Fire/explosion hazards	In a fire or if heated, a pressure increase will occur and the container may burst.
<u>Extinguishing media</u>	
Suitable	Use an extinguishing agent suitable for the surrounding fire.
Not suitable	Do not use water jet.
Fire-fighting procedures	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Hazardous combustion products	Combustion products may include the following: phosphorus oxides carbon oxides (CO, CO ₂) (carbon monoxide, carbon dioxide) nitrogen oxides (NO, NO ₂ etc.)
Protective clothing (fire)	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

Personal precautions	No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. In accordance with good industrial hygiene and safety work practices, airborne exposures should be controlled to the lowest extent practicable. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
Environmental precautions	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
<u>Methods for cleaning up</u>	
Large spill	Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.
Small spill	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

7. Handling and storage

Handling	Put on appropriate personal protective equipment (see Section 8). Workers should wash hands and face before eating, drinking and smoking. Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate.
Storage	Store in accordance with local regulations. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.
Other information	DO NOT ADD NITRITES TO THIS FLUID.

8. Exposure controls/personal protection

Occupational exposure limits

Ingredient name	Occupational exposure limits
Base oil - highly refined	ACGIH TLV (United States). TWA: 5 mg/m ³ 8 hours. Form: Mineral oil, mist OSHA (United States). TWA: 5 mg/m ³ 8 hours. Form: Mineral oil, mist
Triethanolamine	CA Alberta Provincial (Canada). Skin sensitizer. 8 hrs OEL: 5 mg/m ³ 8 hours. Issued/Revised: 4/2004 CA British Columbia Provincial (Canada). TWA: 5 mg/m ³ 8 hours. Issued/Revised: 8/2004 CA Ontario Provincial (Canada). TWA: 3.1 mg/m ³ 8 hours. Issued/Revised: 7/2010 TWA: 0.5 ppm 8 hours. Issued/Revised: 7/2010 CA Quebec Provincial (Canada). Skin sensitizer. TWA _{EV} : 5 mg/m ³ 8 hours. Issued/Revised: 1/2000
Boric acid	CA British Columbia Provincial (Canada). STEL: 6 mg/m ³ 15 minutes. Issued/Revised: 4/2005 Form: Inhalable TWA: 2 mg/m ³ 8 hours. Issued/Revised: 4/2005 Form: Inhalable CA Ontario Provincial (Canada). STEL: 6 mg/m ³ 15 minutes. Issued/Revised: 1/2005 Form: Inhalable fraction TWA: 2 mg/m ³ 8 hours. Issued/Revised: 1/2005 Form: Inhalable fraction

While specific OELs for certain components may be shown in this section, other components may be present in any mist, vapor or dust produced. Therefore, the specific OELs may not be applicable to the product as a whole and are provided for guidance only.

Control Measures	Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
Hygiene measures	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.
Personal protection	
Eyes	Avoid contact with eyes. Safety glasses with side shields or chemical goggles.
Skin and body	Do not get on skin or clothing. Wear suitable protective clothing.
Respiratory	Use adequate ventilation. In accordance with good industrial hygiene and safety work practices, airborne exposures should be controlled to the lowest extent practicable.

The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

9. Physical and chemical properties

Physical state	Liquid.
Color	Yellow. [Light]
Odor	Mild.
Odor threshold	Not available.
Flash point	Water content interferes with flash point determination.
Specific gravity	Not available.
Density	957 kg/m ³ (0.957 g/cm ³) at 15.6°C
pH	9.7 [Conc. (% w/w): 5%]
Boiling point / Range	Not available.
Melting point / Range	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Evaporation rate	Not available.
Solubility	Soluble in water.
LogK _{ow}	Not available.

10. Stability and reactivity

Stability and reactivity	The product is stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	Avoid excessive heat.
Incompatibility with various substances	Reactive or incompatible with the following materials: oxidizing materials.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Hazardous polymerization	Under normal conditions of storage and use, hazardous polymerization will not occur.

11. Toxicological information

Classification

Product/ingredient name	IARC	NTP	OSHA
Triethanolamine	3	-	-

ARC :
3 - Not classifiable as a human carcinogen.

Other Toxicity Data Reproduction/Developmental: Animal ingestion studies in several species, at high doses, indicate that boric acid and certain inorganic borates can cause reproductive and developmental effects. A human study of occupational exposure to borate dust showed no adverse effect on reproduction.

Target organs due to borates: No target organ has been identified in humans. High Dose animal ingestion studies indicate the testes are the target organ in male animals.

These industrial products are not intended for ingestion.

This product is not considered to pose a reproduction/developmental risk to humans.

This information is provided in keeping with best product stewardship practice and in accordance with hazard communication requirements.

Contains material that may cause target organ damage, based on animal data.
Target Organs: kidneys and liver.

Alkanolamine: This product contains an alkanolamine. In all metalworking fluids containing amines, there is a potential for forming nitrosamines which are animal carcinogens. Therefore, no nitrites or related nitrosating agents should be added to such compositions.

Information

Potential chronic health effects

Carcinogenicity	No known significant effects or critical hazards.
Mutagenicity	No known significant effects or critical hazards.
Teratogenicity	No known significant effects or critical hazards.
Fertility effects	No known significant effects or critical hazards.
Reproductive effects	No known significant effects or critical hazards.

Medical conditions aggravated by over-exposure
None known.

12. Ecological information

Ecotoxicity

No testing has been performed by the manufacturer.

13. Disposal considerations

Waste information

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

NOTE: The generator of waste has the responsibility for proper waste identification (based on characteristic(s) or listing), transportation and disposal

14. Transport information

Not classified as hazardous for transport (DOT, TDG, IMO/MDG, IATA/ICAO)

15. Regulatory information

WHMIS (Canada)
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Other regulations

Canada inventory
All components are listed or exempted.

United States inventory (SCA 8b)
All components are listed or exempted.

REACH Status
The company, as identified in Section 1, sells this product in the EU in compliance with the current requirements of REACH.

Product name Hysol MB 50

Product code 465450-US03

Page: 5/6

Version 5.02 Date of issue 01/03/2013.

Format Canada

Language ENGLISH

(Canada)

(ENGLISH)

Australia inventory (AIGS)	At least one component is not listed.
China inventory (IECSC)	All components are listed or exempted.
Japan inventory (ENCS)	All components are listed or exempted.
Korea inventory (KECI)	All components are listed or exempted.
Philippines inventory (PICCS)	Not determined.

16. Other information

Label requirements WARNING !
 CAUSES EYE AND SKIN IRRITATION.
 MAY CAUSE RESPIRATORY TRACT IRRITATION.

History

Date of issue 01/03/2013.

Date of previous issue 11/07/2012.

Prepared by Product Stewardship

Indicates information that has changed from previously issued version.

Notice to reader

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from BP Group.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken. You can contact the BP Group to ensure that this document is the most current available. Alteration of this document is strictly prohibited.



Carman-Dufferin Planning District

Box 160, 12 2nd Avenue SW

Carman MB R0G 0J0

(204) 745-2675

March 15, 2016

Environmental Approvals
160-123 Main Street
Winnipeg, MB R3C 1A5

The purpose of this letter is to provide additional information for the application by Walinga Inc. to your branch.

Attached is information regarding the zoning of the property Walinga Inc. operates on (shown with pins) and the zoning of properties located adjacent to the property. The area subject to the application is zoned ML (Industrial Light) and the operation is a permitted use. Land adjacent to the property is zoned ML, MH (Industrial Heavy) and CH (Commercial Highway).

Walinga Inc. has operated in the Carman Industrial Park for over 26 years and has grown into one of the largest employers in the community.

If you have questions regarding the information please feel free to contact our office at 204-745-2675.

Sincerely

A handwritten signature in black ink, appearing to read "Tyler King". The signature is fluid and cursive, with a long horizontal stroke at the end.

Tyler King
Secretary-Treasurer & Economic Development Officer



Practical Health and Safety Solutions
121 Keedian Drive, East St. Paul, MB R2E 0K3
Phone (204) 668-3141 Fax (204) 654-9583
Email: doug@winnipegairtesting.com

Cor Lodder
Walinga Inc.
3rd Ave. NE
Carman, MB R0G 0J0
Cor.lodder@walinga.com

April 8, 2016
Project Number: 2681

**RE: ENVIRONMENTAL SURVEY
WALINGA, 3RD AVE. NE, CARMAN, MB**

Dear Client:

Please find below the results of the survey performed on March 29, 2016, at Walinga in Carman, MB.

Background

As part of an ongoing health and safety program, air testing for metals, dust, VOCs, and hydrogen chloride as well as noise testing was performed to evaluate the environmental levels inside and around the facility.

Methodology

Air samples were collected using normal industrial hygiene sampling pumps. The sampling pumps were calibrated both before and after the survey to ensure a reliable flowrate. The flowrates, sample times and analysis methods are summarized below.

Sample Type	Flow rate	Method	Time Sampled
Metals	3.0 LPM	NIOSH 7300 & 7600 (Cr VI)	5 to 6 Hours (300 to 360 Minutes)
Hydrogen Chloride	0.3 LPM	NIOSH 7903	
Total Dust	3.0	NIOSH 0500	
VOC	0.2 LPM	VOC Survey	60 to 90 minutes
Paint	0.3 LPM	NIOSH 1450 for n-Butyl Acetate	
		NIOSH 1500 for Total Hydrocarbons as Hexane	

One metal sample, the Machine Shop area, was analyzed for a 14 metal scan. There was no welding taking place in the Machine shop so the sample was analyzed for a 14 metal scan in order to find any metals that may be present at higher concentrations.

Experience has shown that manganese is the “weak link” of welding fume in that it represents the vast majority of the exposure. Therefore the welding shop samples were analyzed for manganese only.

Observations

Walinga is a manufacturer of transport equipment. They perform several processes including welding, chrome plating, and painting. The day of testing was reported to be a normal workday. Sampling for hexavalent chromium was performed at the point of exhaust over the chrome plating tank. The chrome plating tank has an exhaust system which visually captures most of not all of the emission from the tank. Sampling was performed during the charging of the tank when potential emissions should be highest. The sampling equipment was positioned at the back of the tank in the plane of the entry into the exhaust system so as to be representative of the concentration coming out of the exhaust port to the outside environment. There is a tank of hydrochloric acid used to acid strip parts. There is a small local exhaust system for the tank. Sampling for hydrogen chloride was performed at the point of exhaust over the acid stripping tank so as to be representative of the concentration emitted to the environment.

Noise measurements were taken at points around the outside of the facility. It was reported that at the end of the work day, about 5:00 pm, all processes and ventilation equipment is shut down. This includes the air exhaust units outside the building that were the most significant contributors to the noise level produced during the day by the facility.

Noise Measurements

Noise measurements were collected with a Cirrus brand sound level meter (model CR:306) at various locations on the property surrounding both of Walinga’s buildings. Significant noise sources from Walinga were air compressors and air handling units. It was reported that these units are turned off at the end of the workday and do not produce noise during the evening or at night.



The noise level standing next to the central vac system was 70 dBA while it was running. This machine ran intermittently throughout the day. The noise level at the edge of the property was 61 dBA while it was running and 51 – 53 dBA when it was off.

The noise level at the dual exhaust fans was 70 – 71 dBA directly below and 62 – 63 standing at the edge of the parking lot.





The noise level next to the fresh air intake was 66 – 69 dBA and 51 – 53 dBA at the edge of the property.



There was an air compressor inside this housing to reduce the noise emitted by the equipment. This is located between the buildings so is essentially shielded from the neighbours. Throughout the day a cooling system would come on intermittently and produce noise. Noise levels were 76 dBA next to this enclosure while it was running.



This green air compressor was the loudest noise source outside of the facility. It was reported that this compressor is part of the research department and is not usually running. On the day of testing it was running during the morning and off for the rest of the day. Close to the compressor at location 3 on the diagram noise levels were 75 – 79 dBA. While it was running noise levels around the edges of Walinga's the property were 60 – 62 dBA and while it was off levels were around 41 – 45 dBA.



Overhead of View Showing Locations of Noise Testing

Location	Noise sources	Noise Level (dBA)
1	Dual exhaust on welding building	45 - 46
	Dual exhaust, traffic on near by	48 - 51
2	Green air compressor	61
	General hum	43
3	Green air compressor	75
	Dual exhaust, silver building cooling system	60
4	Green air compressor	62
	General hum	42
5	General hum	41
6	Dual exhaust	59
7	Dual exhaust	55
8	Dual exhaust	60
9	Edge of property closest to dual exhaust	62
10	Directly under dual exhaust	70 – 71
11	Next to red central vac system	70
	Red central vac off	55
12	Red central vac running	61
13	Blue fresh air intake	51 – 53

14	General hum/dual exhaust	41
15	Dual exhaust/general hum not audible	41
	Traffic on main road	59

The plant operates only during the day shift. All of the significant noise sources (dual exhaust on northern building, paint booth exhaust, etc.) would not be operated after 6:00 PM. It is anticipated that there would be no significant contribution to ambient noise levels during off hours.

Dust Monitoring

Dust measurements were collected around the facility using an Aerocet 531S Particle Counter. Particle pollution (also called particulate matter or PM) is the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small they can only be detected using an electron microscope. Particles that are less than 2.5 micrometers (PM_{2.5}) in diameter are known as "fine" particles; those larger than 2.5 micrometers, but less than 10 micrometers (PM₁₀), are known as "coarse" particles. The Aerocet can simultaneously measure PM_{2.5} PM₁₀ and total dust.

Summary of Particulate Measurements

Particle Size	Location 1	Location 2	Location 3	Location 4	Location 5	Location 6
PM _{2.5}	5.4	4.9	6.9	6.9	4.9	7.4
PM ₁₀	25.5	22.0	46.7	43.0	34.1	47.6
Total Dust	43.0	50.0	80.1	70.1	50.4	77.2

The Manitoba Ambient Air Quality Criteria is 30 ug/m³ for PM_{2.5} and 50 ug/m³ for PM₁₀. These standards are based on a 24 hour period. The plant operates on single shift and all of the readings (both upwind and downwind of the plant) were within these criteria.

Sampling Results of Total Dust inside Building

2015 Total Dust TLV = 10 mg/m³

Location	Total Dust (mg/m ³)	Total Dust as a % of Allowable
Weld Shop Maintenance	1.18	11.8
Weld Shop Production	1.40	14.0
Weld Shop Service Bay	1.03	10.3

The air samples taken in the welding shop were also analyzed for total airborne dust. The total dust samples were all found to be well within the allowable limit for occupational standards with the values ranging from about 10 to 14% of the TLV.

VOC Testing

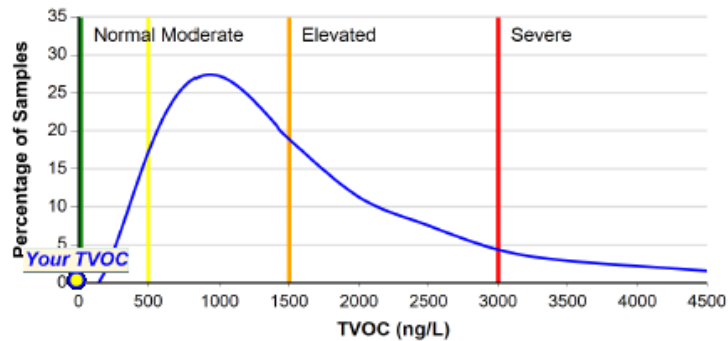
VOC testing was performed for approximately 1 hour while painting was taking place in the paint booth. One sample was taken upwind of the building and the other sample was taken approximately 100 meters downwind of the exhaust stack of the paint booth. On the day of testing there was a light wind blowing towards the south. Both the upwind and downwind levels were below the analytical method of detection. As a point of reference, 500 ng/L is considered good indoor VOC levels for a home. Neither of the samples measured detectable levels of specific compounds. The laboratory report includes a standard scan for solvents of high concern as identified by the EPA. Notice the sensitivity of the test – the method is capable of detecting 0.2 parts per billion of toluene for example. As a point of reference, the Manitoba AAQC is 94 ppb.

Downwind

Total Volatile Organic Compound (TVOC) Summary

Your TVOC Level is: < 200 ng/L

All IAQ Survey TVOC
Air Quality Indicator



EPA Hazardous Air Pollutants

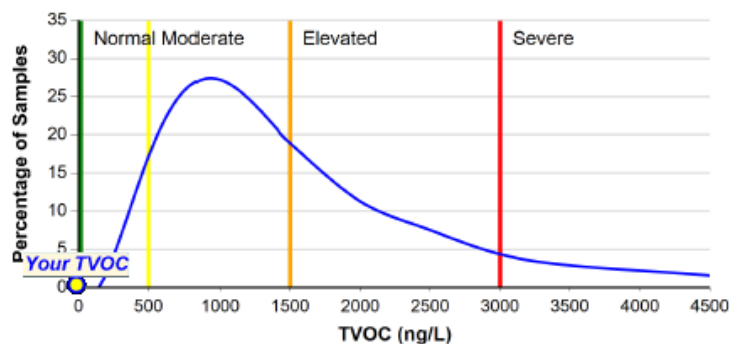
Compound	CAS	Estimated VOC Level (ng/L)	Estimated VOC Level (ppb)	NIOSH Exposure Limit	Description
Carbonyl sulfide	463-58-1	< 1	< 0.4	None Listed	Fumigant; contaminated drywall; fuel combustion byproduct; some foods; naturally occurring at low levels
Carbon disulfide	75-15-0	< 1	< 0.3	3,000 ng/L (1,000 ppb)	Solvent; fumigant; contaminated drywall; combustion byproduct
Methylene Chloride	75-09-2	< 1	< 0.3	Carcinogen	Automotive products; degreasing solvent; paint stripper; adhesive remover; aerosol propellant; insecticide
Hexane (C 6)	110-54-3	< 1	< 0.3	180,000 ng/L (50,000 ppb)	Solvent; adhesive; grease; lubricant; paints and coatings; petroleum fuel component
1,1,1-Trichloroethane	71-55-6	< 1	< 0.2	C; 1,900,000 ng/L (350,000 ppb)	Adhesives, lubricants, cleaners, solvents
Benzene	71-43-2	< 1	< 0.3	320 ng/L (100 ppb)	Gasoline. Less common sources include some discontinued solvents; printing and lithography; paints and coatings; rubber; dry cleaning; adhesives; detergents
1,2-Dichloroethane	107-06-2	< 1	< 0.2	Carcinogen; 4,000 ng/L (1,000 ppb)	PVC production; solvent for rubber, insecticides, oils, waxes, gums, resins; rug and upholstery cleaners
Trichloroethene	79-01-8	< 1	< 0.2	Carcinogen	Dry cleaning; degreasers and cleaners for home/automotive; varnish removers; anesthetic
Methyl methacrylate	80-62-6	< 1	< 0.3	410,000 ng/L (100,000 ppb)	Acrylic Polymers for paints and coatings, adhesives, fillers; solvent; pharmaceuticals; personal care
Toluene	108-88-3	< 1	< 0.3	375,000 ng/L (100,000 ppb)	Gasoline; adhesives (building and arts/crafts); contact cement; solvent; heavy duty cleaner
Tetrachloroethene	127-18-4	< 1	< 0.1	Carcinogen	Dry cleaning; adhesives, automotive cleaners, polishes
Ethylbenzene	100-41-4	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; solvent; pesticide
m,p-Xylene	108-38-3; 108-42-3	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
o-Xylene	95-47-6	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
Styrene	100-42-5	< 1	< 0.2	215,000 ng/L (50,000 ppb)	Polystyrene foam; synthetic rubber; flavoring agent
1,4-Dichlorobenzene	106-46-7	< 1	< 0.2	Carcinogen	Moth balls/crystals; room deodorant
Naphthalene	91-20-3	< 1	< 0.2	50,000 ng/L (10,000 ppb)	Gasoline; diesel; Moth balls/crystals; insecticide

Upwind

Total Volatile Organic Compound (TVOC) Summary

Your TVOC Level is: < 200 ng/L

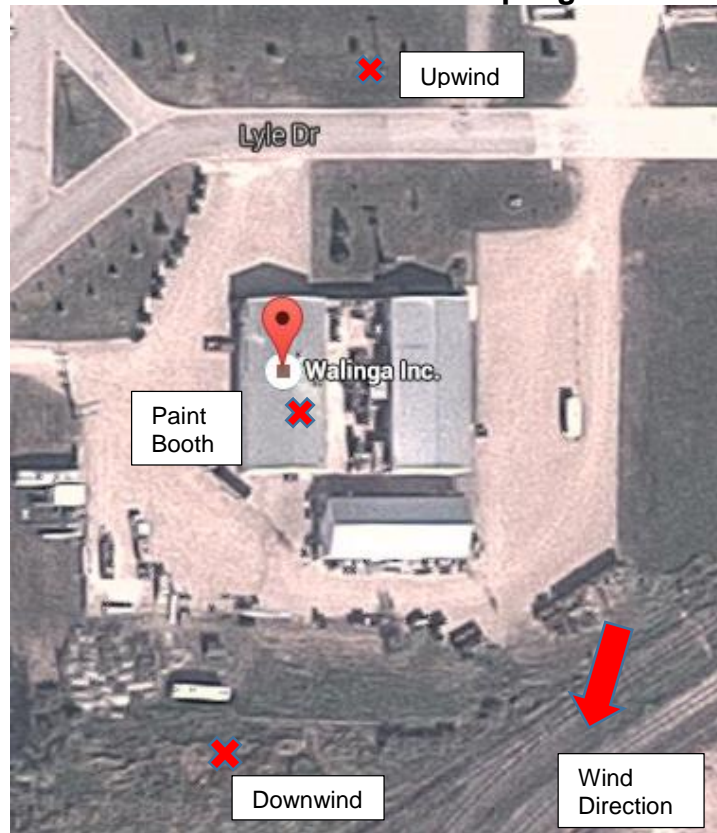
All IAQ Survey TVOC Air Quality Indicator



EPA Hazardous Air Pollutants

Compound	CAS	Estimated VOC Level (ng/L)	Estimated VOC Level (ppb)	NIOSH Exposure Limit	Description
Carbonyl sulfide	463-58-1	< 1	< 0.4	None Listed	Fumigant; contaminated drywall; fuel combustion byproduct; some foods; naturally occurring at low levels
Carbon disulfide	75-15-0	< 1	< 0.3	3,000 ng/L (1,000 ppb)	Solvent; fumigant; contaminated drywall; combustion byproduct
Methylene Chloride	75-09-2	< 1	< 0.3	Carcinogen	Automotive products; degreasing solvent; paint stripper; adhesive remover; aerosol propellant; insecticide
Hexane (C 6)	110-54-3	< 1	< 0.3	180,000 ng/L (50,000 ppb)	Solvent; adhesive; grease; lubricant; paints and coatings; petroleum fuel component
1,1,1-Trichloroethane	71-55-6	< 1	< 0.2	C; 1,900,000 ng/L (350,000 ppb)	Adhesives, lubricants, cleaners, solvents
Benzene	71-43-2	< 1	< 0.3	320 ng/L (100 ppb)	Gasoline. Less common sources include some discontinued solvents; printing and lithography; paints and coatings; rubber; dry cleaning; adhesives; detergents
1,2-Dichloroethane	107-06-2	< 1	< 0.2	Carcinogen; 4,000 ng/L (1,000 ppb)	PVC production; solvent for rubber, insecticides, oils, waxes, gums, resins; rug and upholstery cleaners
Trichloroethene	79-01-6	< 1	< 0.2	Carcinogen	Dry cleaning; degreasers and cleaners for home/automotive; varnish removers; anesthetic
Methyl methacrylate	80-62-6	< 1	< 0.3	410,000 ng/L (100,000 ppb)	Acrylic Polymers for paints and coatings, adhesives, fillers; solvent; pharmaceuticals; personal care
Toluene	108-88-3	< 1	< 0.3	375,000 ng/L (100,000 ppb)	Gasoline; adhesives (building and arts/crafts); contact cement; solvent; heavy duty cleaner
Tetrachloroethene	127-18-4	< 1	< 0.1	Carcinogen	Dry cleaning; adhesives, automotive cleaners, polishes
Ethylbenzene	100-41-4	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; solvent; pesticide
m,p-Xylene	108-38-3; 106-42-3	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
o-Xylene	95-47-6	< 1	< 0.2	435,000 ng/L (100,000 ppb)	Gasoline; paints and coatings; adhesives and cements; solvent; print cartridges
Styrene	100-42-5	< 1	< 0.2	215,000 ng/L (50,000 ppb)	Polystyrene foam; synthetic rubber; flavoring agent
1,4-Dichlorobenzene	106-46-7	< 1	< 0.2	Carcinogen	Moth balls/crystals; room deodorant
Naphthalene	91-20-3	< 1	< 0.2	50,000 ng/L (10,000 ppb)	Gasoline; diesel; Moth balls/crystals; insecticide

Locations of VOC Sampling



Paint

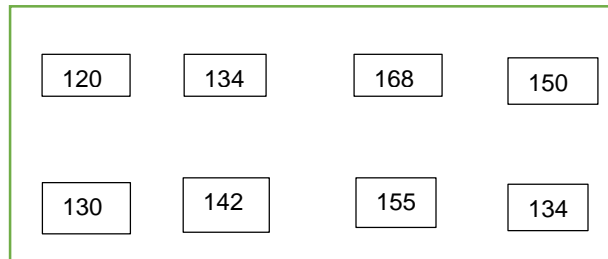
Based on a review of the most commonly used paints in the facility n-butyl acetate and total hydrocarbons as hexane were selected for testing.

Sampling Results for Paint Booth Exhaust 2015 TLV for n-Butyl Acetate = 150 ppm

Sample Location	n-Butyl Acetate (ppm/ug/m ³)	Total Hydrocarbons as Hexane (ppm)
Paint Booth Exhaust	2.168 / 10,300	4.993

The Ontario Ambient Air Quality Criteria for n-butyl acetate is 15,000 ug/m³ averaged over a 1 hour period. A sample collected in the exhaust system found a concentration of 10,300 ug/m³. Thus, it is estimated that the concentration even from the point of emission is less than the Ontario ambient air quality criteria before correcting for any dispersion or dilution in the environment. No discernible odour was present downwind during the painting operation.

The velocity of the airflow from the paint was measured as part of survey. The paint booth had an average face velocity of 142 feet per minute. This meets the generally accepted face velocity of 100 feet per minute recommended in the ACGIH Ventilation Manual.



Paint booth air flow (ft/min)

Metals

Samples were located in 4 locations inside the northern most building where some welding is performed. The results were compared to the 2015 Threshold Limit Values (TLVs). TLVs represent time-weighted average airborne concentrations to which it is believed that a worker can be exposed, 8 hours per day, 40 hours per week, without adverse effect. TLVs have been adopted in the Safety and Health legislation as the allowable exposure guidelines in Manitoba.

The exposure from the air samples are provided in the following table. The results are presented as a percentage of the allowable exposure under current occupational exposure guidelines. An exposure equal to the allowable exposure would be represented as 100%. An exposure greater than the allowable limits would be a number greater than 100%. An exposure at half of the allowable level would be 50%

Sampling Results of Manganese Testing 2015 TLV Manganese = 0.02 mg/m³ = 20 ug/m³

Sample Location	Manganese (ug/m ³)	Manganese as a % of allowable
Weld Shop Maintenance	9.31	47
Weld Shop Production	6.96	35
Weld Shop Service Bay	3.24	16
Machine Shop Main Area	0.71	3.5

There was a local exhaust system observed to be in use in the production welding area. This is likely why a higher manganese concentration was found in the maintenance area, as there was no exhaust system used in the maintenance area. Manitoba does not have an ambient criteria for manganese. One rule of thumb is dividing the occupational limit by a factor of 10 (i.e., 2 micrograms). The average manganese concentration of the indoor samples was 5 micrograms per cubic meter. If it is assumed that this is the concentration exhausted to the outside, it would be almost impossible that a concentration of greater than 2 ug/m³ would be present at or beyond the property line. Ontario uses an Ambient Air Quality Criteria of 0.4 ug/m³ for manganese averaged over a 24 hour period. Based

on a 24 average period, the emissions from the northern building would also meet this criteria.

The table below shows the sampling for hexavalent chromium emitted from the plating operation. One sample was collected 1-2 meters away from the tank to test for potential worker exposure within the plant. This value should be compared to the ACGIH TLV. A second sample was collected in the plane of the local exhaust ventilation system to measure the concentration emitted into the environment. This gives the emission concentration from the exhaust stack. The concentration would disperse and dilute with distance from the building. The concentration beyond the property line should be compared to the Manitoba Maximum Acceptable Level concentration for hexavalent chromium (chromic acid) which is 4.5 ug/m³. The plating exhaust was collected over a period of 66 minutes to compare it the 1 hour sampling period on the ambient standards is based.

Sampling Results of Chromium VI Testing

2015 TLV Chromium VI = 0.05 mg/m³ = 50 ug/m³

MB Maximum Acceptable Level = 4.5 ug/m³

Sample Location	Chromium VI (ug/m ³)
Cr Plating Area	<0.806
Cr Plating Exhaust	388

The indoor air concentration was well within the TLV. The exhaust concentration was approximately 86 times the 4.5 ug/m³ ambient air criteria. The system is a small volume system so it should disperse quickly with distance.

Acid

As part of the chrome plating process, parts are placed in an acid stripping bath before the chrome is applied. A sample for hydrochloric acid was collected from the exhaust over the acid tank.

Sampling Results for Hydrochloric Acid

Manitoba Maximum Acceptable Level = 70 ppb

Sample Location	Hydrochloric Acid (ppb)
Acid Tank Exhaust	122

The Manitoba Ambient Air Quality criteria is 70 parts per billion (0.070 ppm). Thus the emission concentration at the in the tank and/or point of emission is less than twice the ambient air quality criteria. This is an extremely low volume emission. Thus, there is no chance that an airborne concentration of more than 70 ppb would be present at or beyond the property line.

I hope this information is of assistance to you. Should you have any questions or if we can be of any further assistance, please contact me at (204) 668-3141.

Sincerely
Winnipeg Air Testing
Per:

Caroline Gebel

Caroline Gebel, B.Sc.
Industrial Hygienist

Reviewed by:

Douglas N. Wylie

Doug Wylie, CIH, ROH, CRSP, CRM
Occupational Hygienist

Copy of Laboratory Results

Total Dust

Sample ID	Cust. Sample ID	Location	Date	Pre-Wt	Time		
Parameter	Filter ID	Method		Post-Wt	Flow Rate	Vol.	Concentration
163868-001		Weld Shop 1 Maintenance	03/29/16	40.37 mg			
TND		NIOSH 0500		41.56 mg		1010 L	1.18 mg/m3
163868-002		Weld Shop 2 Production	03/29/16	40.37 mg			
TND		NIOSH 0500		41.77 mg		1000 L	1.40 mg/m3
163868-003		Weld 3 Service Shop	03/29/16	40.17 mg			
TND		NIOSH 0500		41.2 mg		999 L	1.03 mg/m3

Metals

Sample ID	Cust. ID	Location	Date	Time	Flow	Volume
Parameter		Method		Total	RL*	Conc.
163868-001		Weld Shop 1 Maintenance	03/29/16			1010 L
Manganese		NIOSH 7300M		9.36 µg	0.400 µg	9.31 µg/m3
163868-002		Weld Shop 2 Production	03/29/16			1000 L
Manganese		NIOSH 7300M		6.98 µg	0.400 µg	6.96 µg/m3
163868-003		Weld 3 Service Shop	03/29/16			999 L
Manganese		NIOSH 7300M		3.24 µg	0.400 µg	3.24 µg/m3
163868-004		Cr Plating Area	03/29/16			621 L
Chromium (VI)		NIOSH 7600		<0.500 µg	0.500 µg	<0.806 µg/m3
163868-005		Cr Plating Exhaust	03/29/16			204 L
Chromium (VI)		NIOSH 7600		79.1 µg	0.500 µg	388 µg/m3
163868-008		Main Shop Area Metals	03/29/16			1030 L
Aluminum		NIOSH 7300M		1.63 µg	1.00 µg	1.58 µg/m3
Antimony		NIOSH 7300M		<0.400 µg	0.400 µg	<0.389 µg/m3
Beryllium		NIOSH 7300M		<0.400 µg	0.400 µg	<0.389 µg/m3
Cadmium		NIOSH 7300M		<0.400 µg	0.400 µg	<0.389 µg/m3
Chromium		NIOSH 7300M		1.10 µg	1.00 µg	1.07 µg/m3
Cobalt		NIOSH 7300M		<0.400 µg	0.400 µg	<0.389 µg/m3
Copper		NIOSH 7300M		<1.00 µg	1.00 µg	<0.972 µg/m3
Iron		NIOSH 7300M		86.7 µg	1.00 µg	84.3 µg/m3
Lead		NIOSH 7300M		<0.400 µg	0.400 µg	<0.389 µg/m3
Manganese		NIOSH 7300M		0.728 µg	0.400 µg	0.707 µg/m3
Molybdenum		NIOSH 7300M		<0.400 µg	0.400 µg	<0.389 µg/m3
Nickel		NIOSH 7300M		<0.400 µg	0.400 µg	<0.389 µg/m3
Titanium		NIOSH 7300M		<0.400 µg	0.400 µg	<0.389 µg/m3
Vanadium		NIOSH 7300M		<0.400 µg	0.400 µg	<0.389 µg/m3
Zinc		NIOSH 7300M		<1.00 µg	1.00 µg	<0.972 µg/m3

METALS EXPOSURE DATA & CALCULATIONS

CLIENT:	Walinga Inc.	TYPE OF SAMPLE:	Area
LOCATION:	3rd Ave. NE, Carman, MB	WORK STATION:	Machine Shop
DATE:	March 29, 2016	CONTROLS:	None

Cassette Number	Run Time (minutes)	Flow Rate (LPM)	Volume (m3)
	343	3	1.029

Chemical	2015 TLV (mg/m3)	Result (ug)	Health Effect	TWA (mg/m3)	Exposure (% of TLV)
Aluminum	1	1.63	lung, irritation, neurotoxicity	0.002	0.2
Antimony	0.5	0.4	Respiratory tract irritation	0.000	0.1
Cadmium	0.01	0.4	kidney damage	0.000	3.9
Chromium (III)	0.5	1.1	irritation	0.001	0.2
Cobalt	0.02	0.4	asthma, lung, CVS	0.000	1.9
Copper-Fume	0.2	1	irritation, GI, fume fever	0.001	0.5
Iron Oxide	5	86.7	pneumoconiosis	0.120	2.4
Lead	0.05	0.4	CNS, blood, kidney, repro	0.000	0.8
Manganese	0.02	0.728	CNS Impairment	0.001	3.5
Molybdenum	10	0.4	Respiratory tract irritation	0.000	0.0
Nickel (elemental)	1.5	0.4	lung, irritation, dermatitis	0.000	0.0
Titanium Dioxide	10	0.4	lung	0.000	0.0
Vanadium Pentox	0.05	0.4	irritation, lung	0.001	2.0
Zinc Oxide - Fume	2	1	Metal Fume Fever	0.001	0.1

Dominant Health Effect: Kidney Damage
Combined Exposure (as % of permissible) 5%

n-Butyl Acetate

Sample Location	Sample Volume (L)	Total BuAc (mg)*	Actual Exp (mg/m³)*	Actual Exp (PPM)	Report Limit (mg)**
Paint Booth Exhaust	20.70	0.213	10.300	2.168	0.040

Total Hydrocarbons as Hexane

Sample Location	Sample Volume (L)	Total HC (mg)*	Actual Exp (mg/m³)*	Actual Exp (PPM)	Report Limit (mg)**
Paint Booth Exhaust	20.70	0.364	17.589	4.993	0.105

Hydrochloric Acid

Sample Location	Sample Volume (L)	Total HCl (mg)*	Actual Exp (mg/m³)*	Actual Exp (PPM)	Report Limit (mg)**
HCl Strip Exhaust	112.20	0.020	0.182	0.122	0.010

Our File No. A640 0002 001 001 07

March 14, 2016

Walinga Inc.
Box 1790
70 - 3rd Avenue, NE
Carman, Manitoba
R0G 0J0

Sent via Email: cor.lodder@walinga.com

Attention : Mr. Cor Lodder

Re: Ventilation Design Summary
Walinga Inc.
Carman, Manitoba

Dear Mr. Lodder:

Accutech Engineering Inc. (Accutech) was retained by Walinga Inc. to complete the facility ventilation plan for the proposed plating facility in Walinga's Carman plant. As part of this design, Walinga Inc. has requested assistance from Accutech in completing a portion of an Environmental Act Proposal as it pertains to the new ventilation system designed.

The following report constitutes Accutech's summary of:

- Rationale behind the development of the design
- Products and techniques being used
- Associated design standards used to create the design
- Summary of air volumes and processes
- Description of proposed stages of development for implementation of the ventilation project
- Types of chemicals and classifications according to the American Conference of Governmental and Industrial Hygienists (ACGIH)

This report is intended to be submitted along with the Issue for Tender Drawing package and Addenda 1 to 3 for the Walinga Tank Ventilation Design Project.

Introduction and Background

The Machining Division of Walinga Inc., located at 70 - 3rd Avenue NE, in Carman, Manitoba, is planning on introducing a new plating line into their manufacturing facility. The purpose of the new ventilation system is to remove potentially hazardous chemicals

Walinga Inc.
Mr. Cor Lodder
 March 14, 2016

Page 2 of 4

from the breathing zone of the facility and exhaust them to the atmosphere.

The new tank ventilation design at Walinga Inc. has been created using the following guidelines and standards:

- American Society of Heating, Refrigeration, and Air Conditioning (ASHRAE) 62.1 – The Standards for Ventilation and Indoor Air Quality
- National Building Code 2010
- ACGIH – Industrial Ventilation - A Manual of Recommended Practice for Design - 27th Edition

The purpose of the ventilation system designed is protecting workers from potentially harmful effects of the various chemicals used in the plating line, by the stripping process, and the by-products created by the various reactions that are taking place. A further influence in the design is to provide a high quality system that will be durable and long lasting in this role.

Table 1: Summary of Air Flow Volumes, Potential Contaminants, and Classifications

Tank	Process	Exhaust Air Required	Design Chemical	ACGIH Classification*	Potential Breathing Zone Contaminant
Corvor Tank 1	Plating	6,000cfm	Nickel II	A1	Nickel Sulfate Mist
Corvor Tank 2 Number	Plating	6,000cfm	Nickel II	A1	Nickel Sulfate Mist
HCl	Cleaning	6,000cfm	HCl	A1	Acid Mist, Hydrogen Chlorine Gas
Electroclean	Cleaning	3,200cfm	NaOH	C2	Alkaline Mist, Steam
Stripper Tank	Stripping	6,000cfm	3-sodium nitrobenzoate	A2	Alkaline Mist, Steam
General Ventilation	n/a	3,000cfm	n/a	n/a	
Subtotal		30,200cfm			

* Classification per ACGIH Standards for Determination of Hazard Potential, Determination of Rate of Gas, Vapour or Mist Evolution (Table 13-70-1 and 13-70-2).

Description of Proposed Development

The purpose of the tank ventilation design is to ensure a safe and healthy work environment for employees of the facility.

During the plating process, potentially harmful contaminants are continuously collected via dedicated exhaust hoods (refer to drawing package) and the vapours are exhausted to the atmosphere. Each tank has been given a dedicated exhaust duct and fan to ensure that

Walinga Inc.
Mr. Cor Lodder
March 14, 2016

Page 3 of 4

cross-contamination of chemicals does not occur. Each exhaust stack is also equipped with an exhaust nozzle at the stack termination to expel air at a higher velocity.

Each exhaust stack is also equipped with a low level drain. Walinga Inc. will establish maintenance procedures to regularly drain condensate and precipitation from the exhaust stack, and dispose of the condensate according to safe work practices.

Air being exhausted is to be replaced with an equivalent volume of air from a direct-fired make-up air unit located outside of the facility.

The schedule of the proposed renovation is to commence construction in the early spring of 2016, with construction being complete and the renovated plating facility being operational by the end of summer 2016.

Construction is planned to be completed in a single stage. Refer to Issue for Tender drawings and Addenda 1 to 3 of the Tank Ventilation project for scope of work.

Description of Environmental and Human Health Effects of the Proposed Development

Table 1 lists the vapours and chemicals that are being exhausted by the proposed ventilation system. The classification of these chemicals refers to the ACGIH classifications found in Appendix A of *Industrial Ventilation: A Manual of Recommended Practice for Design – 27th Edition*.

Table 2: Hygienic Standards for Chemicals (Table 13-70-1 ACGIH: Industrial Ventilation)

Hazard Potential	STEL Mist Concentration
A	0-0.1 mg/m ³
B	.11-1.0 mg/m ³
C	1.1-10 mg/m ³
D	Over 10 mg/m ³

The designed ventilation rates and volume of air flow for each chemical have been established to maintain the concentration of the airborne chemicals in the working area below the Time-Weighted Average (for 40 hour work work), or Short-Term Exposure Limits (STEL) for each chemical as established by ACGIH, under normal operating conditions.

Walinga Inc.
Mr. Cor Lodder
March 14, 2016

Page 4 of 4

Environmental Mitigation Measures and Residual Environmental Effects

The environmental mitigation measures taken into account for this renovation are:

- 1) Utilizing industry accepted standards for ventilation design.
- 2) Large air volumes to decrease concentration of potential contaminants.
- 3) Welded ductwork to minimize the potential for leaks.
- 4) Locked condensate drains in each exhaust duct.

Yours truly,
ACCUTECH ENGINEERING INC.



Dan Nenadov
Mechanical E.I.T / Project Manager



ENVIRONMENTAL POLICY

POLICY:

Walinga Inc. is committed to ensuring the environment is protected by meeting or exceeding all federal and provincial environmental legislation.

HAZARDOUS WASTE:

Purpose:

To ensure Walinga Inc. meet all federal and provincial environmental requirements by continuously evaluating less hazardous chemical, close control of all its processes and the proper handling, storage and disposal of chemical waste.

Responsibilities:

Management:

- (i) To ensure environmental legislation is complied with at all times.
- (ii) Ensure all equipment is properly maintained.
- (iii) Provide the necessary equipment to ensure proper handling and care can be exercised at all times.
- (iv) Provide employees handling chemical hazardous substances with the necessary training.
- (v) Establish an Environmental Committee.
- (vi) Ensure Quality Control program is in place to minimize waste generation.

Health & Safety Committee:

- (i) Identify all toxic/hazardous substances
- (ii) Ensure that incident reporting procedures are in place and are being followed.
- (iii) Inspect work place on a regular basis . Appendix 13.
- (iv) Assist in developing training programs where required.

Supervisor:

- (i) Ensure all employees are trained in proper handling and use of hazardous/toxic substances.
- (ii) Assist with the evaluation of processes to reduce or eliminate the use of hazardous substances.
- (iii) Enforce strict Quality Control procedures to reduce waste generation.

Worker:

- (i) Follow all guidelines in respect to environmental control and procedures.
- (ii) Ensure all spills are reported - Appendix 13.
- (iii) Assist with cleanup.



MANITOBA ENVIRONMENT INSPECTIONS

PROCEDURE:

Dept. of the Environment will prearrange or have an unannounced inspection visit.

* Designated employee will accompany Dept. of Environment inspector while inspection is being conducted.

Dept. of Environment inspector will receive full co-operation during the course of inspection.

Notes will be taken by company representative of photographs taken, what is seen, who has been interviewed, what was said and sampling procedures and locations. Report filed by H & S Coordinator

A list will be prepared of all documents or photocopies.

Ensure representative samples are taken for possible analysis by an independent lab.

* If Dept. of the Environment conducts an unannounced inspection the following must be established:

- (a) Purpose of investigation and or nature of problem.
- (b) If specific date or series of dates is under investigation
- (c) Specific location or source which is under investigation
- (d) The section of which regulation or Act which may have been violated.

Operations

Walinga manufactures components for the Walinga Pneumatic Conveying Systems. An example of some of the products manufactured at the plant include:

1. 2018 Airlock Rotors (2018 Airlock)
2. 614 Impellers (614 Blower)
3. 614 Blower Castings (614 Blower)

Manufacturing Processes

2018 Airlock Rotors

Raw material for the shafts & pipes are cut on the Automated HYD-MECH S20A horizontal Band saw which uses recycled Coolant Oil from our CNC Machining Centers to cut material. Coolant is recycled once again through this Saw using a screen filter and holding tank. Chips from this Saw cutting process are emptied from the screen into 5 gallon pails for disposal in the Urban Mine Scrap Bin.

Once Shafts are cut to length the shafts are transported using a diesel operated Forklift to the HAAS ST-40 CNC Machining Center – Walinga Asset # 937. (Ref. Machining Process) Shafts are faced & center drilled on the ST-40 using an 8800 Com-Cool Coolant mixed 5% with Town Water. Any machining chips produced from the machining process are collected using a chip conveyor built into the machine and deposited into a chip bin. Once the chip bin is full, the bin is dumped into the Urban Mine Scrap Bin.

Pipes are brought to the shot blaster to be cleaned for welding. The shot blaster, located in the paint area, uses steel shot which mixes with high flow air pressure to blast the pipes clean. The steel shot is recycled and continuously used. Any dust that is released from the shot blaster is disposed of using a Walinga Central Vac that is directly piped to the shot blaster. Once the Central Vac Bin is full it is dumped into the steel turnings bin and disposed of via Urban Mine.

Once the Shafts are faced & center drilled the shafts & pipes are brought to the welding area to be welded together. The Welder uses Blue Shield 6 Gas with a LA-C6 Welding Wire. The Welding area is located in Bay 1&2 in the Service Shop, which has a fresh air system that works in conjunction with a squirrel fan located in the welding area. The Fresh air system pumps fresh air into the shop, while the squirrel fan sucks the welding smoke out into the atmosphere. (Ref: Winnipeg Air Testing report attached.)

Once the Rotor Hub (Welded shaft & pipe) are welded together they are brought to the Mori Seiki – CNC Machining Center – Walinga Asset # 741. (Ref. Machining Process) This CNC Machine uses 8800 Com-Cool Coolant mixed 5% with Town Water. Any machining chips produced from the machining process are collected using a conveyor built into the machine and deposited into a chip bin. Once the chip bin is full, the bin is dumped into the Urban Mine Scrap Bin.

The finished Rotor Hub is brought to the welding area to have veins welded onto the Hub, which are then transferred back to the ST-40 for the final machining process.

614 Impellers

Raw Cast Iron Casting is brought to the Toyoda – CNC Machining Center – Walinga Asset #747. (Ref. Machining Process) for rough machining. The second operation on the Toyoda machines the outside of the impeller. This CNC Machine uses 8800 Com-Cool Coolant mixed 5% with Town Water. Any machining chips produced from the machining process are collected using a conveyor built into the machine and deposited into a chip bin. Once the chip bin is full, the bin is dumped into the Urban Mine Scrap Bin.

The Roughed Profiled Impeller is sent to the CNC Planer – Walinga Asset #755. (Ref. Machining Process) for to finish the profile. Any dust that is released from the planer is disposed of using a Walinga Central Vac System that is directly piped to the CNC Planer. Once the chip bin is full, the bin is dumped into the Urban Mine steel turnings Scrap Bin.

Once the Profile is finished the finished Impeller is sent to the Chrome room for a finished coating. The 614 Impellers are put in the parts washer located in the Chrome Room to get washed in hot water for 5-10 minutes. The parts washer is plumbed into the sump pit in the Machine Shop to collect any chips, dirt etc. from going into the sewer system.

Once the 614 Impeller is washed it is put on a jig and lowered into the cold water rinse tank to get washed & scrubbed with Comet household cleaner. The cold water rinse tank is 850 liters and is changed annually. Waste water is emptied into a tote for pickup and disposal via Miller Environmental.

Once the 614 Impeller is cleaned it is hooked up to the charge bar and lowered into the Hexavalent Chrome Tank for 35 minutes at 3500 Amps. The electrical current ranges from 6-12 volts and 500-5500 amps. The Chrome tank has a plastic honey comb air scrubber filters that is mounted directly above the tank. The filter is changed and rinsed daily as well they are removed and inspected semi-annually for damage. These filters last for 10-20 years, yet if disposal is required they are disposed of via Miller Environmental. The Hexavalent Chrome tank is maximum 1,052 liters. Tank is added to on an as needed basis.

Once Chroming has been completed the finished 614 Impeller is dipped in the rinse tank to release any excess chromium. The rinse tank is 932 liters and is changed bi-annually. Waste water is emptied into a tote for pickup via Miller Environmental.

In the case that the impeller failed the chroming process it is then stripped in the Hydrochloric Acid tank for anywhere from a day to two days. The Hydrochloric Acid tank has a squirrel fan directly above the tank pulling fumes into the atmosphere. (Ref: Winnipeg Air Testing - report attached.)

Employees are required to wear proper PPE when working in the wash/rinse & chrome tank area at all times. These PPE's include: Rubber Gloves, Plastic Aprons, CSA Approved Footwear, and a PUREFLO ESM Air Hood. Employees are also required to provide a urine sample for Chromium Testing semi-annually which is reviewed with Management, Employee, and Employees Doctor. (Ref: Walinga Health & Safety Policy – attached.)

614 Blower Castings

Raw Castings are brought to the NX 76 – CNC Machining Center – Walinga Asset # 745. (Ref. Machining Process) to get rough machined. This CNC Machine uses 8800 Com-Cool Coolant mixed 5% with Town Water. Any machining chips produced from the machining process are collected using a conveyor built into the machine and deposited into a chip bin. Once the chip bin is full, the bin is dumped into the Urban Mine Scrap Bin.

Rough Machined Castings are brought off site for Thermal Stress Relieving and upon their return are finished machining on the NX 76 – CNC Machining Center and measured for accuracy.

Once final machining is complete the Castings are brought for Chroming using the same process as the 614 Impellers.

Once the 614 Blower Castings are finished Chroming they are brought to the Haas mini mill to have excess chrome milled on the ends of the castings.

614 Impellers & 614 Castings are assembled with other misc parts to build a finished 614 Blower.

Once 614 Blower is assembled it is sent for paint. The paint shop consists of a filtered booth which exhausts the filtered air conventionally to the atmosphere using a stack on the roof of the building. Filters are changed as paint accumulation is noticed on the openings of the filter. The filters are an ANDREA paint over spray filter #AF813. Filters are disposed of via Pembina Valley Containers. Employees wear a fresh air hood and full Tyvek paint suit while in the paint booth at all times.

The 614 Blower is Acid washed in the paint booth using a DUJEL 200 Acid and let sit for 10-15 minutes. Once the 15 Minutes is up the 614 Blower is washed with a SYN 3-X mixed 2% with Town Water to neutralize the Acid. The 614 Blower is then rinsed with a Secure Stream FRP Paint Adhesion to assist in paint adhesion.

All Paint is Sherwin Williams brand (traditional wet paint process) and is stored in JUSTRITE fire proof storage cabinets. Paint is mixed on a mixing table using a squirrel fan to release emissions into the atmosphere. The volume of emissions from the primer & paint used are as follows:

US3 – 7.07 Lb/Gal

V6V 965 – 3.15 Lb/Gal

E2A 960 – 1.95 Lb/Gal

GH1093 – 2.91 Lb/Gal

Paint – 1.49 – 10 Lb/Gal (depending on color)

614 Blower is primed & painted resulting in a finished product.

Custom Machining & Welding

Walinga Custom Machining is the production of a variety of products for different customers.

CNC Herbert Lathe – Walinga Asset # 757. (Ref. Machining Process) Machine is used as part of our custom machining. Machine uses Hydrex TK 68 Waylube. Any machining chips produced from the machining process are collected in 5 gallon pails and deposited in the Urban Mine Scrap Bin.

CNC Manual Mazak – Walinga Asset # 759. (Ref. Machining Process) Machine is used as part of our custom machining. Machine uses AW 22 Cutting Oil. Any machining chips produced from the machining process are collected in 5 gallon pails and deposited in the Urban Mine Scrap Bin.

Walinga does custom welding, both Aluminum & Steel for various custom work as well in the Service of Walinga's line of Hopper Auger Feed Trailers. Steel welders use Blue Shield 6 Welding Gas, while the Aluminum Welders use Argon Welding Gas. The Welding area is located in Bay 3 & 4 in the Service Shop. The Fresh air system pumps fresh air into the shop, while also pulling gasses up and out into the atmosphere. (Ref: Winnipeg Air Testing report – attached.)

WALINGA INC. - EAP – Machining Process

Haas St-40 – CNC Machining Center – Walinga Asset # 937

- **What does this Machine Do?**

This machine holds on to round parts with a chuck. The chuck turns the raw metal, cast iron or aluminum and the turret holds the cutting tools. The chuck is turned on via the main computer of the machine and then the machine pulls up the program and then the turret with cutting tool comes and peels metal off the bar and makes it the desired size that the program is telling it to do. The machine takes care of the fumes from the cutting action with its own built-in mist extractor, and the chips from turning get taken out the machine via a chip conveyor.



- **What Walinga Parts do we run on this machine?**

Walinga parts on this machine are rotors, endplates, couplings, some of these are aluminum and some are cast iron and some are steel.

- Filter Type – Coolant filter - Canister style bag type #2 25 microns Haas - #93-9130
- Filter Type - Air/mist extractor - Haas filter enclosure exhaust - #59-1520
- Coolant Filter is replaced once a year. Used filters are disposed of via Pembina Valley Containers. Mist filters are washed once a month inside the machine in a closed loop system.
- Chip Bin is emptied into container for pickup by Urban Mine.
- Coolant is recycled through the machines. Coolant is replaced annually & disposed of via Clean Harbors.
- Machine take a Hydrex Oil AW 32 - 20 Liters
- Machine take a 100 mesh -140 micron Haas Filter #59-0798

Studer S33 – CNC Machining Center - Walinga Asset # 743

- **What does this Machine Do?**

Used to shape the outside of an object. The cylindrical grinder can work on a variety of shapes, however the object must have a central axis of rotation. This includes but is not limited to such shapes as a cylinder, an ellipse, a cam, or a crankshaft.



- **What Walinga Parts do we run on this machine?**

Impellor shafts and shaft sleeves with a variety of tooling.

- Filter Type - Coolant filter - Blanket style - Studer brand - 25 microns.
- Coolant filter is replaced every three years. Used filters are disposed of via Pembina Valley Containers.
- Chip Bin is emptied into container for pickup by Urban Mine.

05-09-16

- Coolant is recycled through the machines. Coolant is replaced annually & disposed of via Clean Harbors.
- Machine takes a Shell Tonna S32 Oil - 16 litres - Oil filter #A5490118 & #G4862
- Oil & Filters are replaced annually.

Haas VF-6 – CNC Machining Center - Walinga Asset # 737

- **What does this Machine Do?** This machine uses a milling cutter to remove material from the surface of a workpiece. The milling cutter is a rotary cutting tool, often with multiple cutting points. As opposed to drilling, where the tool is advanced along its rotation axis, the cutter in milling is usually moved perpendicular to its axis so that cutting occurs on the circumference of the cutter. As the milling cutter enters the workpiece, the cutting edges (flutes or teeth) of the tool repeatedly cut into and exit from the material, shaving off chips from the workpiece with each pass. The cutting action is shear deformation; material is pushed off the workpiece in tiny clumps that hang together to a greater or lesser extent (depending on the material) to form chips.



The milling process removes material by performing many separate, small cuts. This is accomplished by using a cutter with many teeth, spinning the cutter at high speed, or advancing the material through the cutter slowly; most often it is some combination of these three approaches. The speeds and feeds used are varied to suit a combination of variables. The speed at which the piece advances through the cutter is called **feed rate**, or just **feed**; it is most often measured in length of material per full revolution of the cutter.

There are two major classes of milling process:

- In **face milling**, the cutting action occurs primarily at the end corners of the milling cutter. Face milling is used to cut flat surfaces (faces) into the workpiece, or to cut flat-bottomed cavities.
- In **peripheral milling**, the cutting action occurs primarily along the circumference of the cutter, so that the cross section of the milled surface ends up receiving the shape of the cutter. In this case the blades of the cutter can be seen as scooping out material from the work piece. Peripheral milling is well suited to the cutting of deep slots, threads, and gear teeth.

The machine takes care of the fumes from the cutting action with its own built in mist extractor, and the chips from turning get taken out the machine via a conveyor.

- **What Walinga Parts do we run on this machine?**

We run cast iron casings and endplates, on this machine. Also some aluminum covers.

05-09-16

- Filter Type – Coolant filter – Supplemental chip tray filter basket – HAAS Brand - #30-10904
 - Filter Type - Air/mist extractor - Haas filter enclosure exhaust - #59-1520
 - Coolant filter is replaced annually. Used filters are disposed of via Pembina Valley Containers.
 - Mist filters are washed once a month inside the machine in a closed loop system.
 - Chip Bin is emptied into container for pickup by Urban Mine.
 - Coolant is recycled through the machines. Coolant is replaced annually & disposed of via Clean Harbors.
 - Machine takes a Mobil SHC 627 Oil.
 - Oil is Replaced Annually.
-

Mazak – CNC Machining Center - Walinga Asset # 739

- **What does this machine do?** This machine holds on to round parts with a chuck. The chuck turns the raw metal, cast iron or aluminum and the turret holds the cutting tools. The chuck is turned on via the main computer of the machine and then the machine pulls up the program and then the turret with cutting tool comes and peels metal off the bar and makes it the desired size that the program is telling it to do. The machine takes care of the fumes from the cutting action with its own built in mist extractor, and the chips from turning get taken out the machine via a conveyor.



- **What Walinga parts do we run on this machine?**

Cast Bearing Cartridges, aluminum couplings, steel couplings, Steel timing hubs, steel shaft sleeves are some of the parts.

- Filter Type – Mist extractor - Multi-Flo
 - Filter Type - Extended surface air filter - Koch filter corporation #112-650-010
 - Filters are replaced every 3-6 months depending on machine use.
 - Used filters are disposed of via Pembina Valley Containers.
 - Chip Bin is emptied into container for pickup by Urban Mine.
 - Coolant is recycled through the machines. Coolant is replaced annually & disposed of via Clean Harbors.
 - Machine takes 5 Liters LLC YZ (long life coolant) 50/50 Mix with distilled water.
 - Machine takes 20 Liters Hydrex AW 32 Oil.
 - Oil is replaced annually.
-

Toshiba NX76 – CNC Machining Center – Walinga Asset # 745

- **What does this machine do?** This machine uses a milling cutter to remove material from the surface of a workpiece. The milling cutter is a rotary cutting tool, often with multiple cutting points. As opposed to drilling, where the tool is advanced along its rotation axis, the cutter in milling is usually moved perpendicular to its axis so that cutting occurs on the circumference of the cutter. As the milling cutter enters the workpiece, the cutting edges (flutes or teeth) of the tool repeatedly cut into and exit from the material, shaving off chips from the workpiece with each pass. The cutting action is shear deformation; material is pushed off the workpiece in tiny clumps that hang together to a greater or lesser extent (depending on the material) to form chips.



The milling process removes material by performing many separate, small cuts. This is accomplished by using a cutter with many teeth, spinning the cutter at high speed, or advancing the material through the cutter slowly; most often it is some combination of these three approaches. The speeds and feeds used are varied to suit a combination of variables. The speed at which the piece advances through the cutter is called **feed rate**, or just **feed**; it is most often measured in length of material per full revolution of the cutter.

There are two major classes of milling process:

- In **face milling**, the cutting action occurs primarily at the end corners of the milling cutter. Face milling is used to cut flat surfaces (faces) into the workpiece, or to cut flat-bottomed cavities.
- In **peripheral milling**, the cutting action occurs primarily along the circumference of the cutter, so that the cross section of the milled surface ends up receiving the shape of the cutter. In this case the blades of the cutter can be seen as scooping out material from the work piece. Peripheral milling is well suited to the cutting of deep slots, threads, and gear teeth.

The machine takes care of the fumes from the cutting action with its own built in mist extractor, and the chips from turning get taken out the machine via a conveyor.

- **What Walinga parts do we run on this machine?**

We run cast iron casings and endplates, on this machine. Also some aluminum covers.

- No coolant filters or air filters on this machine.
- Electrical cabinet takes 20/10 furnace filter - Co-op brand.
- Chip Bin is emptied into container for pickup by Urban Mine.
- Coolant is recycled through the machines. Coolant is replaced annually & disposed of via Clean Harbors.
- Machine takes 150 Liters - HM 22/ convert to Hydrex AW 22 Oil.

05-09-16

- Filter is a Wix Filter R05D10C or as replacement, Donaldson Filter # P171810
- Oil is replaced annually.

Toyota – CNC Machining Center - Walinga Asset # 747

- **What does this machine do?** This machine uses a milling cutter to remove material from the surface of a workpiece. The milling cutter is a rotary cutting tool, often with multiple cutting points. As opposed to drilling, where the tool is advanced along its rotation axis, the cutter in milling is usually moved perpendicular to its axis so that cutting occurs on the circumference of the cutter. As the milling cutter enters the workpiece, the cutting edges (flutes or teeth) of the tool repeatedly cut into and exit from the material, shaving off chips from the workpiece with each pass. The cutting action is shear deformation; material is pushed off the workpiece in tiny clumps that hang together to a greater or lesser extent (depending on the material) to form chips.



The milling process removes material by performing many separate, small cuts. This is accomplished by using a cutter with many teeth, spinning the cutter at high speed, or advancing the material through the cutter slowly; most often it is some combination of these three approaches. The speeds and feeds used are varied to suit a combination of variables. The speed at which the piece advances through the cutter is called **feed rate**, or just **feed**; it is most often measured in length of material per full revolution of the cutter.

There are two major classes of milling process:

- In **face milling**, the cutting action occurs primarily at the end corners of the milling cutter. Face milling is used to cut flat surfaces (faces) into the workpiece, or to cut flat-bottomed cavities.
- In **peripheral milling**, the cutting action occurs primarily along the circumference of the cutter, so that the cross section of the milled surface ends up receiving the shape of the cutter. In this case the blades of the cutter can be seen as scooping out material from the work piece. Peripheral milling is well suited to the cutting of deep slots, threads, and gear teeth.

The machine takes care of the fumes from the cutting action with its own built in mist extractor, and the chips from turning get taken out the machine via a chip conveyor.

- **What Walinga parts do we run on this machine?**

We run cast iron casings and endplates, on this machine. Also some aluminum covers.

05-09-16

- Filter Type - Mist extractor - Multi-Flo
 - Filter Type - Extended surface air filter - Koch filter corporation #112-650-010 Air filter is replaced every 3-6 months depending on machine use. Filter is disposed via Pembina Valley Containers.
 - Filter Type - Coolant filter - canister style 25 microns. Filter is replaced every three months. Used filters are disposed of via Pembina Valley Containers.
 - Chip Bin is emptied into container for pickup by Urban Mine.
 - Coolant is recycled through the machines. Coolant is replaced annually & disposed of via Clean Harbors.
 - Machine takes 60 Liters Velocite # 3 Cooling Oil.
 - Machine takes 70 Liters Turboflo Rand O 32 Oil.
 - Oil is replaced annually.
-

Mori Seiki – CNC Machining Center – Walinga Asset # 741

- **What does this machine do?** This machine holds on to round parts with a chuck. The chuck turns the raw metal, cast iron or aluminum and the turret holds the cutting tools. The chuck is turned on via the main computer of the machine and then the machine pulls up the program and then the turret comes and peels metal off the bar and makes it the desired size that the program is telling it to do. The machine takes care of the fumes from the cutting action with its own built in mist extractor, and the chips from turning get taken out the machine via a conveyor.



- **What Walinga Parts do we run on this machine?**

Rough cut gear blanks, steel impellor shafts, splining assorted couplings.

- Filter Type - Mist extractor- Multi-Flo
 - Filter Type - Extended surface air filter – Koch filter corporation #112-650-010 Air filter is replaced every 3-6 months depending on machine use. Filter is disposed via Pembina Valley Containers.
 - Chip Bin is emptied into container for pickup by Urban Mine.
 - Coolant is recycled through the machines. Coolant is replaced annually & disposed of via Clean Harbors.
 - Machine takes 60 Liters Hydrex AW 32 Oil.
 - Machine takes 2 Liters Velocite #3 Cooling Oil.
 - Oil Filter is Yamashin OT 2-04-30-15-R/c ½ model # 12312FD
 - Oil is replaced annually.
-

05-09-16

CNC Planer - Walinga Asset # 755

- **What does this machine do?**

The parts are clamped in the machine, with the clamps on the shafts so that the profile can be formed with a cutter being pulled across the part while the table travels back and forth. As the table moves the tool moves along the profile of the part and this action is guided by a computer controlling the servo motors. The cast iron chips get sucked up using the central vac.

- **What Walinga parts do we run on this machine?**

This machine only runs impellers.

- Filter Type – Central Vac air suction. Runs through a particle filter.
- The filter is replaced annually. Used filters are disposed via Pembina Valley Containers.
- Machine uses TK 68 way lube.



Surface Grinder – Walinga Asset #

- **What does this machine do?**

Surface grinding is the most common of the grinding operations. It is a finishing process that uses a rotating abrasive wheel to smooth the flat surface of metallic or nonmetallic materials to give them a more refined look or to attain a desired surface for a functional purpose.

The surface grinder is composed of an abrasive wheel, a workholding device known as a chuck or a magnet and a reciprocating or rotary table. The magnet holds the material in place while it is being worked on. The table reciprocates back and forth with the grinding wheel turning against the part .0005” at a time. This gets done until the part is perfectly flat, with no machine lines showing up.

- **What Walinga parts do we run on this machine?**

Airlock tips

- Filter Type - screen filter with a magnetic siphon filter which collects metal shavings from the coolant.
- Chip Bin is emptied into container for pickup by Urban Mine.
- Machine takes 8800 Com-Cool coolant at 5% mix with water.
- Machine takes 40 Liters Hydrex XV All season oil.
- Oil is replaced annually.

05-09-16

SM Lathe 2060 - Walinga Asset #761

- **What does this machine do?** This machine rotates the workpiece on its axis to perform various operations such as cutting, sanding, knurling, drilling, or deformation, facing, turning, with tools that are applied to the workpiece to create an object with symmetry about an axis of rotation. **What Walinga parts do we run on this machine?**

Assorted impellers, and facing and center drilling shafts. Facing cast iron endplates for airlocks also get machined on this machine.

- Machine takes 30 Liters Hydrex AW 22 Oil.
- Oil is replaced annually.



Portable Power Pack – Walinga Asset # 781

- Used for Hydraulic Operations Used on Walinga Agri-Vacs to test Hydraulic Operations.
- Power Pack takes 60 Liters Hydrex XV All Season Oil
- Parker SM 6720 Oil Filter
- Oil is replaced every 5 years.



Waste oil receiver – Walinga Asset # 944

- Pumps used oil from service shop to the waste oil container outside. Used Oil is picked up by GFL (Green For Life - Environmental Corp).



Custom Machining

Walinga Custom Machining is the production of a variety of products for different Customers. Walinga uses the same processes with Custom Machining as regular production.

05-09-16

Herbert Lathe - Walinga Asset # 757

- **What does this machine do?**

This machine rotates the workpiece on its axis to perform various operations such as cutting, sanding, knurling, drilling, or deformation, facing, turning, with tools that are applied to the workpiece to create an object with symmetry about an axis of rotation.

- Machine is used as part of our Custom Machining Process.
- Machine takes 2 Liters Hydrex TK 68 Way lube.
- Oil is replaced every 5 years.



Manual Mazak – Walinga Asset # 759

- **What does this machine do?**

This machine rotates the workpiece on its axis to perform various operations such as cutting, sanding, knurling, drilling, or deformation, facing, turning, with tools that are applied to the workpiece to create an object with symmetry about an axis of rotation. (This machine is similar to the Herbert Lathe shown in photo above.)

- Machine is used as part of our Custom Machining Process.
- Machine takes AW 22 Oil.
- Oil is replaced annually.

May 30, 2016



Walinga Inc. – EAP

To: Environmental Approvals Branch - Manitoba Conservation and Water Stewardship

Att: Eshetu Bashada

From: Walinga Inc. - Cor Lodder (cor.lodder@walinga.com Phone 204-745-2951 x428)

Re: Environmental Act Proposal Form – Follow-up item – Reason for Change

Why are we replacing Industrial Hard Chrome with this new “CORVOR” hard coating?

And why is it more health & wellness and environmentally beneficial?

What changes are we making to our operation and what do we see for growth?

Why are we replacing Industrial Hard Chrome with this new “CORVOR” hard coating?

Some 15 years ago, Walinga Inc made the decision to pursue alternatives for our Industrial Hard Chrome Plating Process. This was in response to the increased pressure from the Canadian and US governments desire to gradually phase out the use of Chromium in manufacturing processes. There is also a European mandate that bans the use of Hexavalent Chromium Chemistry by September 21, 2017.

The technical details of the new hard coating process is outlined in the report supplied and dated May 18, 2016 under the sub-title of: **The Environmental Benefits of Composite Electroless Nickel Coatings**. This report also highlights some of the reasons to eliminate Hard Chromium from the manufacturing environment.

Then after many years of testing numerous “Hard Chrome Alternatives” (HCA), we found a proprietary process that was not only superior in abrasive wear resistance, but was also more health & wellness, and environmentally responsible than Industrial Hard Chrome. In February 2011 we signed a Non-Disclosure Agreement (NDA) and a Technology Transfer Agreement with the company that developed this composite electroless nickel (CEN) coating. (Walinga has given this hard coating a trade and marketing name of “CORVOR”. This name is exclusive to Walinga and is currently being registered as our trademark.) The Walinga product is a world leader in quality and performance, with “Hard Chromed Blowers” as a key component to maintaining the longest lasting and most wear resistant blower in the industry. Our leadership in Bulk Transportation Equipment and Pneumatic Conveying Systems since 1954 has been achieved by continuous improvement, leading edge technologies, uncompromising care and attention for our employees and the environment, and great customer service.

And why is it more health & wellness and environmentally beneficial?

The finishing industry is facing a greater challenge to reduce the environmental impact of its processes than ever before. Perhaps the paramount challenge is to replace chrome plating due to its negative environmental and health effects. Due to this, chromium reduction has been a key focus of companies, the military, industry conferences, academia and legislation. Many applications have already been converted from chrome plating to other finishing operations. Because chrome is used so widely for varying purposes, it is impractical to expect to find a single replacement that will work in all applications. In applications requiring hardness and wear resistance, composite EN coatings have been even more successful in not only replacing chrome but actually surpassing the performance of hard chrome plating.

This new CEN does not have the negative health and wellness properties of Hard Chrome and is therefore more readily accepted by industry and the EPA etc.

What changes are we making to our operation and what do we see for growth?

With this new CEN hard coating process we expect to continue coating our existing production parts, for the Walinga product line. Beyond that and as the system gets on line, we intend to phase out our Hard Chrome Plating line completely. As we get established on our own products, we would like to promote our hard coating services to others in the Agricultural equipment manufacturing industry. There is considerable opportunity for adding high wear surface properties to many other products, giving us and other Canadian manufacturers a competitive edge in the North American and Global marketplace. This is expected to create growth opportunities for us as a company. The company that owns the technology has encouraged us to take on more work once established, since they have other companies asking for shops that will do this type of hard coating for them.

Walinga Inc is a family owned company and we have always prided ourselves in being innovative and make all efforts to be self-contained in our manufacturing capabilities. This gives us unique opportunities to create leading edge products and processes, as well as control over quality, delivery, and after the sale support. That is also why we pursued hard chrome back in 1980 after getting parts chromed by others for a short time and then found a system that allowed us to do the Hard Chroming work in-house. That was installed in 1981 and has served us well since. The switch to this new CEN is our next step in staying on the leading edge and ensuring that our employees and the environment have our best interests at heart.

The timelines for all this is dependent on when we get our approvals and permits. The engineering is confirmed with Accutech Engineering, and the bids have been received from the mechanical contractors for the tank ventilation system. The sooner we can get the system going the better for our team and all related beneficiaries including the environment.

May 18, 2016



Walinga Inc. – EAP

To: Environmental Approvals Branch - Manitoba Conservation and Water Stewardship

Att: Eshetu Bashada

From: Walinga Inc. - Cor Lodder (cor.lodder@walinga.com Phone 204-745-2951 x428)

Re: Environmental Act Proposal Form – Follow-up item

Why are we replacing Industrial Hard Chrome with this new “CORVOR” hard coating?

And why is it more health & wellness and environmentally beneficial?

The Environmental Benefits of Composite Electroless Nickel Coatings

Article From: Products Finishing, Michael D. Feldstein, President from Surface Technology Inc.

Posted on: 8/1/2002

Because of the negative environmental and health effects related to chromium, finishers are looking for a replacement. Composite electroless nickel coatings may be one solution...

The finishing industry is facing a greater challenge to reduce the environmental impact of its processes than ever before. Perhaps the paramount challenge is to replace chrome plating due to its negative environmental and health effects. The EPA has found chromium to potentially cause skin irritation and ulceration during short-term exposures. Long-term effects include damage to the liver, kidneys, circulatory system and nerve tissue, as well as skin damage and cancer.

In 1972, Congress passed the Clean Water Act, which protects our lakes, rivers, aquifers and coastal areas. It was amended in 1977. Under this law, most chromium limits were set by state and local environmental agencies. Under the recently proposed Metal Products and Machinery Rule (MP&M), the maximum daily limit for chromium would be 1.3 mg/liter and 0.55 mg/liter maximum monthly average. Not necessarily easy numbers to reach.

Due to this, chromium reduction has been a key focus of companies, the military, industry conferences, academia and legislation. Many applications have already been converted from chrome plating to other finishing operations. Because chrome is used so widely for varying purposes, it is impractical to expect to find a single replacement that will work in all applications.

While questions exist about the environmental ramifications of nickel, it is still clearly less problematic than chrome. For this reason, electroless nickel (EN) has been used to replace chrome in many decorative as well as functional applications, such as for corrosion and wear resistance. **In applications requiring hardness and wear resistance, composite EN coatings have been even more successful in not only replacing chrome but actually surpassing the performance of hard chrome plating.**

Composite EN coatings have codeposited particles dispersed throughout the coating layer as in Figure 1. These coatings, therefore, have all of the inherent features of electroless nickel as well as the properties of whatever particles are selected, such as hardness, wear resistance, lubricity, heat transfer, light absorption, etc. For this reason, composite EN coatings are better than chrome or any electrolytic or spray processes for non-line-of-sight applications.

Recent analysis has further demonstrated that these composite EN coatings not only have tremendous potential to replace chrome, but actually can be used to reduce nickel use and pollution as well. This interesting opportunity exists on three levels.

No Chrome Composite EN coatings use no chrome. The environmental problems inherent with plating and using chrome are therefore entirely eliminated.

Less Nickel Used

Composite EN coatings can be routinely produced with up to 40% by volume of codeposited particles. The implications are significant in four aspects:

1. Most simply, this means that at least 40% less nickel is required to produce composite coatings of equal thickness to a conventional coating without such particles.
2. Given the greater wear resistance of composite EN coatings versus conventional coatings, the deposit thickness of composite coatings can be significantly less than conventional EN coatings. This means even less nickel needs to be used.
3. As such, composite EN coatings last longer, parts will need to be recoated or replaced less frequently. Again, resulting in even less nickel used.
4. The less nickel the plating shop uses, the longer the baths will last. This means less baths required, less waste treatment and less waste.

Less Nickel Released

Concern about the release of chrome, nickel and other metals into the environment does not stop at the plating shop's door. As coatings wear, their constituents are released. Depending on the application, they can be released into work areas, food applications, sensitive assemblies and the environment as a whole. Composite EN coatings have the further advantage, therefore, of preventing the release of such metals based on the following four principles:

1. Greater wear resistance of the composite EN coatings reduces the release of the coating into the environment.
2. As the composite coating can be up to 40% inert particles, the coating released into the environment will be up to 40% less metal.
3. As parts last longer, they are not discarded into the environment as often, and less replacement parts are required.
4. Because composite EN coatings can be chemically stripped, used parts can be stripped and recoated, thereby reclaiming the nickel metal in solution form for recycling.

There is one other aspect worth considering. Chrome is often “over-plated” on parts with complicated geometries to achieve the correct deposit thickness in areas with lower current densities. Not only is this an excessive use of chrome plating, it also requires grinding the plated parts to the proper dimensional tolerances. This grinding naturally releases chrome metal into the environment. Over-plating and grinding also require additional and wasted energy consumption.

Here is a simple analogy showing that “less can be more” in performance and environmental terms. In the past, the government has required the inclusion of various additives to gasoline. These additives such as ethanol or oxygenated fuel serve to reduce the amount of gasoline used and, subsequently, the amount of gasoline released into the environment. This same principle is achieved by adding inert particles to EN plating, as well as significant performance advantages provided by the particles for hardness, wear resistance, impact resistance, lubricity, etc., depending on the particles incorporated.

Background on Composite EN

Composite EN is intriguing because it intentionally introduces insoluble particulate matter into the plating solution for codeposition into the coating. The stability ramifications to the plating bath are significant. One gram of 1.0-micron sized diamond particles, for instance, contains 310,000,000,000 particles.¹ This creates a surface area loading near 100,000 cm²/liter, approximately 800 times the preferred loading of a conventional EN bath.²

This natural incompatibility between an inherently unstable, surface-area-dependent plating bath and an extraordinary loading of insoluble particles has been overcome by the precise addition of particulate matter stabilizers or PMSs.³ The methods disclosed therein have made composite EN plating reliable and commercially viable by modifying the Zeta potential of particles in a plating system. Zeta potential is an effect of electrostatic charge. A wide variety of particulate matter is capable of codeposition in EN coatings. In each instance, the plating bath must be modified to accept the specific particles and produce an optimal coating.

Composite EN coatings are regenerative because of the uniform manner with which the particles are dispersed throughout the entire plated layer, as observable in the cross sectional

Figure 1. Particle matter suitable for composite EN incorporation can be from nanometers up to approximately 10 microns in size. A narrow particle size range is specified for each application. Certain performance benefits have been discovered when a composite coating is generated simultaneously using two distinct particle sizes. It is theorized that the smaller particles fill the spaces between the larger particles.⁴ This also further increases the percent by volume of the particulate matter and further reduces the amount of nickel used.

Coating thickness specifications are typically set on a value between 10 and 25 microns (0.0005 -0.001 inch) for most applications. Very tight coating thickness specifications can be established for particular applications and routinely reproduced within a few microns by the plating shop. As with conventional EN, composite EN coatings can be heat treated after plating to enhance their hardness and adhesion to the substrate.

Depending on the particle sizes and certain plating conditions, coatings can be produced with a particle density of up to 40% by volume. Lesser densities may not provide the maximum benefit available from the particulate matter, and significantly higher densities risk premature wear of the coating since there may not be enough of the metal “glue” to prevent the particles from being removed. This observation indicates that the typical wear mechanism of composite EN coatings is not wear to the particles themselves, but rather wear to the surrounding metal matrix that eventually allows the particles to be removed.

To date, coatings designed for increased wear resistance have proven to be the most widely used composite EN coatings. As this category of composite EN coatings has the greatest potential to replace and surpass hard chrome plating, and provide the health and environmental benefits presented above, we will focus on this category. Within the wear-resistance category, an extensive array of suitable particles can be used, including diamond, silicon carbide, aluminum oxide, tungsten carbide, boron carbide and chromium carbide. These materials differ not only in hardness and wear resistance but also in their shape. Any of these factors can affect surface and performance characteristics.

Table I⁵ includes hardness measurements for various materials and coatings. Due to the mechanism of standard indentation hardness testing, true hardness evaluation of composite EN coatings is a bit elusive. Because of this limitation of the test method, and that such coatings are primarily employed for wear resistance (a feature not necessarily directly correlated to hardness), a review of various wear resistance testing is more useful. It should be noted, however, that standardized wear testing methods are instructive but cannot substitute for controlled testing of various composites under the actual intended use conditions.

Various test methods have been employed to evaluate wear resistance of different materials and coatings. Perhaps the most common test method is the **Taber abrasive wear test**. In the Taber test method, a coated panel turns under two rotating abrasive wheels. Wear is measured as the weight loss of the panels following a specified number of rotating cycles. The lower the

wear index, the lower the wear to the coating. The coatings and materials in Table II⁶ were tested by 1,000 cycles on the Taber test device.

Table III⁷ presents Taber abrasion test results for Nano-PlateTM 150 (a composite electroless nickel deposit with nano-sized diamond particles) and hard chrome plating. These results are based on an extensive test of 10,000 cycles.

Other test methods also demonstrate the enhanced wear resistance of composite EN coatings in comparison to hard chrome plating. It is instructive to see the performance of materials under various wear conditions. Figure 2⁸ includes the results of the Yarnline Abrasive Wear Test, where an abrasive yarnline under constant tension is drawn across a material sample at a constant speed and force. Results are measured in material removal over time as cu mil per hour and show the dramatic difference between hard chrome plating and a composite EN coating with silicon carbide particles.

Composite EN coatings can offer excellent wear resistance and hardness compared to hard chrome plating. Other application and performance benefits of composite EN coatings over hard chrome plating have also been presented. Composite EN coatings are available to replace and perhaps surpass hard chrome plating. There are significant health and environmental benefits created by the elimination of chrome. As composite EN coatings can be reliably produced with up to about 40% by volume of codeposited particles, such coatings further have the ability to reduce the amount of nickel used and released into the environment.

References

1. Mypolex Micropolycrystalline Diamond Powder, E.I. DuPont de Nemours & Company, Inc., page 17.
 2. Feldstein, N.; Lancsek, T.; Lindsay, D; Salerno, L.; Electroless Composite Plating; Metal Finishing, August, 1983, pgs. 35-51.
 3. U.S. Patents 4,997,686, 5,145,517, 5,300,330, and 5,863,616.
 4. U.S. Patents 4,547,407 and 4,906,532.
 5. N. Feldstein, Composite Coatings, Materials Engineering, Cleveland, Ohio, (1981).
 6. N. Feldstein, Composite Coatings, Materials Engineering, Cleveland, Ohio, (1981).
 7. "Composite Electroless Coatings with Nanometer Diamond Particles", Michael Feldstein, Nanomaterials Workshop, December 11, 2002.
 8. N. Feldstein, Composite Coatings, Materials Engineering, Cleveland, Ohio, (1981)
-

MATERIAL SAFETY DATA SHEET

Section 1 Product Identification

MANUFACTURER: UNITECH LUBRICANTS AMERICA INC.
ADDRESS: 605 COLBY DRIVE
 WATERLOO, ON, N2V 1A1

EMERGENCY PHONE NUMBER: 519-884-9209 (Mon-Fri: 8am-5pm)

PRODUCT NAME: HOSMAC-S 5035 CA

PRODUCT TYPE: Water-miscible metal working coolant

PREPARED BY: OH&S Coordinator

DATE OF ISSUE: November 15, 2011

SUPERCEDES:

Section 2 Product Composition/Information on Ingredients

INGREDIENT:	% wt	CAS NO:	LC/50 & LD/50 Route, Species
Severely Hydrotreated Petroleum Oil	30-40	64742-52-5	See Section 11
Ethoxylated Fatty Alcohol	1-5	37335-03-8	N.Av.

Section 3 Hazards Identification

Routes of entry:

Skin Contact..... Prolonged contact may cause slight irritation with itching and local redness

Skin Absorption..... No evidence of harmful, effects from available information

Eye Contact..... May cause irritation, experience as stinging with blinking and tear production. Excess redness and swelling may occur.

Inhalation..... Mist may cause irritation of the nasal and respiratory tract.

Ingestion..... Signs and symptoms may include pain or discomfort in the mouth, throat, chest and abdomen.

Effects of acute exposure..... Prolonged or frequent contact may cause skin and eye irritation. Inhalation of mists/vapors may cause respiratory irritation.

Effects of chronic exposure..... Not Determined

Section 4 First Aid Measures

Instructions.....

Eye Contact. Flush eyes with large amounts of running water for at least 15 min. Hold eyelids apart to ensure rinsing of the entire surface of the eye and lids with water. Remove any contact lenses. Seek medical attention.

Inhalation. In case of inhalation, remove to fresh air. Aid in breathing, if necessary. Consult a physician.

Skin Contact. Remove any contaminated clothing and wash affected area with plenty of soap and water. If irritation persists, get medical attention.

Ingestion. Never give anything by mouth if the victim is unconscious. Do not induce vomiting without medical advise. Consult a physician.

Section 5 Fire Fighting Measures

Flammability.....	Combustion can be induced by high-energy source. See Flash Point
Extinguishing Media.....	All purpose foam, carbon dioxide, dry chemical media, sand or earth
Special Procedures.....	Do not spray water or foam directly into burning material, as spattering may occur which can spread the fire. Wear full protective equipment including a self-contained breathing apparatus.
Flash Point (C), Method.....	>170C
Auto Ignition Temperature.....	N.D.
Upper flammable limit (% by vol.)	Not Established
Lower flammable limit (% by vol.)	Not Established
Explosion Data	
Explosive Power.....	Not Applicable
Rate of Burning.....	N.Av.
Sensitivity to static.....	N.Av.
Sensitivity to impact.....	Not Applicable
Unusual fire and explosion.....	During a fire, oxides of nitrogen and carbon may be evolved
Hazardous combustion products....	Burning can produce, carbon monoxide is highly toxic if inhaled; carbon dioxide in sufficient concentrations can act as an asphyxiant. Oxides of carbon and nitrogen. Trace oxides of sulfur. Acute overexposure to the products of combustion may result in irritation of the respiratory tract.

Section 6 Accidental Release Measures

Leak/Spill.....	As with any other industrial lubricating oils, use oil-binding agents. Spills or leaks may cause slippery conditions. Small Spills: Soak in absorbent granules or sand and dispose according to all applicable Federal, State and Local regulations. Large Spills: Bind using absorbent granules, sand or earth. Reclaim liquid directly or soak in an absorbent medium, and transfer to a suitable, marked container. This product is non-hazardous waste when spilled or disposed of, as defined in Resource Recovery Act (RCRA) regulations (40 CFR 261). Dispose according to all applicable Federal, State and Local regulations.
-----------------	--

Section 7 Handling and Storage

Handling procedure and equipment.....	Do not swallow. Avoid contact with, skin, and clothing. Wear protective equipment during handling. Use adequate ventilation. Maintain a good personal hygiene. Wash thoroughly after handling. Recommend proper scheduled machine sump cleanings to minimize exposure to bacterial contaminants (i.e. removal of tramp oils and metal fines etc.). Mild skin irritation may be experienced when the diluted product has been contaminated by certain oils by dissolved metals, or when mix ratio is too strong. When problems occur, use of water-resistant barrier creams may be a temporary control measure. Contact Lubricor for specific recommendations.
Storage needs.....	Keep away from incompatible materials. If frozen thaw and mix before sampling or using. Keep container tightly closed when not in use. Store in dry conditions protected from frost and elevated temperature. Avoid heat and sources of ignition. Store in original container or other mild steel or high-density polyethylene containers, which are closable and clearly labeled.

Section 8 Exposure Controls/Personal Protection

Gloves/Type.....	Impervious gloves, such as nitrile gloves are recommended when handling product concentrate
Respiratory/Type.....	In applications where time-weighted exposures are 0.5 to 5 mg/m ³ , mist reduction through improved ventilation, mist collection or process modification is recommended by NIOSH. Where this is not possible, NIOSH recommends the use of any air purifying, half-mask respirator including disposable respirator equipped with any P or R series particulate filter. If the average exposure will exceed 5 mg/m ³ , NIOSH recommends use of a powered, air-purifying respirator equipped with a hood or helmet and a HEPA filter. If respiratory problems are present when mist levels are < 0.5 mg/m ³ , respiratory protection should be based on the individual recommendation of a qualified health care provider.
Eye/Type.....	Mono-goggles or safety glasses recommended
Footwear/Type.....	Chemical resistant boots
Clothing/Type.....	Wear an apron and/or an overall
Other/Type.....	Eye bath
Engineering Controls.....	Engineered controlled enclosure/local exhaust. When no ventilation recommend R or P (P95) respirator. When used in applications generating high levels of mist, operator exposure can be minimized by proper ventilation, use of mist collectors or splashguards as appropriate. If there is doubt about actual mist levels present, monitoring should be conducted
Additional Information.....	Adopt normal good working practices and personal hygiene standards. Wash hands after use, before eating, drinking, or smoking, and before and after using the toilet. Contaminated clothing should be laundered before re-use.

Section 9 Physical and Chemical Properties

Physical State.....	Amber liquid
Odor.....	Mild pleasant odor
Odor Threshold.....	N.Av.
Vapor Pressure (mmHg).....	N.D.
Vapor Density (Air =1).....	N.D.
Evaporation Rate.....	N.D.
Freezing Point.....	<0C
Molecular wt.....	N.Ap.
Percent Volatile.....	N.D.
Boiling Point.....	> 100 C
pH.....	9.8 @ 5% Fresh Charge
Specific Gravity.....	0.95 @ 20C
Solubility in water.....	Complete
Coefficient of water/oil dist.....	N.D.

Section 10 Stability and Reactivity

Chemical Stability	Stable under normal conditions.
Conditions to avoid.....	Use as directed.
Materials to avoid.....	Oxidizing agents (i.e. chlorates, peroxides), strong acids, and strong bases.
Hazardous products of decomposition	See hazardous combustion products.
Hazardous polymerization.....	Will not occur.

Section 11 Toxicological Information

Routes of Entry.....	Ingestion. Skin and eye contact. Inhalation if mists, vapor or airborne particulates are generated.
Effects of Acute Exposure.....	Inhalation: The product is unlikely to present any significant inhalation hazard at ambient temperatures. Ingestion: The product has a low order of acute oral toxicity – ingestion is not regarded as a significant health hazard likely to arise in normal use. Swallowing significant quantities may cause discomfort, nausea, irritation of digestive tract, and diarrhea
Effects of Chronic Exposure.....	There are no reports of long-term adverse toxic effects in man attributable to the use of this type of product.
LD50 of Material.....	64742-53-6 N.Av.
LC50 of Material.....	64742-53-6 N.Av.
Carcinogenicity of Material.....	No effects are known from the use of this type of product
Reproductive Effects.....	No effects are known from the use of this type of product
Irritancy of Material.....	Eyes: Eye contact can cause strong irritation and stinging. Skin: The product may cause irritation in contact with the skin. This may become more intense if the material is not promptly removed or if contact is frequent or prolonged.
Sensitizing capability of Material...	None expected
Tetratogenicity.....	N.D.
Mutagenicity.....	N.D.
Other Information.....	N.Av.
Additional comments.....	None
Synergistic Materials.....	N.D.
Exposure Limits.....	OSHA regulation 29 CFR 1910.1000 establishes an exposure limit for oil mist in air. The applicability of this exposure limit to emulsions has not been established. OSHA 29 CFR 1910.1000 of oil mist in air: 5mg/m ³ ACGIH: TLV for oil mist in air: 5mg/m ³ NIOSH REL Metalworking fluid mist: 0.5 mg/m ³

Section 12 Ecological Considerations

Ecotoxicity.....	N.Av.
Environmental Fate.....	N.Av.

Section 13 Disposal Considerations

Waste Disposal.....	Wastes must be tested using methods described in 40 CFR 261 to determine if it meets applicable definitions of hazardous waste. No EPA waste numbers are applicable for this product's components. Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.
---------------------	--

Section 14 Transportation Information

Dot Classification.....	Not a DOT controlled material
Proper Shipping Name.....	Not regulated by this mode of transportation
TDG Classification.....	Not Regulated
UN Number	Not Applicable
DOT Identification Number.....	None
Packing Group.....	None
Hazardous Substances Reportable Quantity.....	N.Av.
Special Provisions for Transportation.....	None
Additional Shipping Information...	N.D.
International Transportation Regulations.....	N.D.

Section 15 Regulatory Information

Federal and State Regulations ...	OSHA: Not hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200) SARA TITLE III SARA Section 302 (40 CFR 355 Appendix A): None of this product's components are listed; SARA Section 311/312: None; SARA Section 313 (40 CFR 372.65) None of this product's components are listed; CERCLA (40 CFR 302.4) None of the product's components are listed; RCRA: Not Listed TSCA Inventory: All of this product's components are listed. International Inventories: All of this product's components are on or exempt from these inventories: Canada DSL, EINECS, Australia, Japan, China, Korea, and the Philippines. State Lists: None of this products components are listed in CA, FL, MA, MN, NJ, or PA The content of this Hydrosol 5035NH is not classified as hazardous material, dangerous goods, prohibited or restricted articles by IATA This product does not contain any chemicals currently on the California List of Known Carcinogens and Reproductive Toxins
WHMIS Classification.....	D2B
CPR Compliance.....	Yes

HOSMAC-S 5035 CA has been classified in accordance to the controlled product regulation and the MSDS contains all the information required by the CPR.

HOSMAC-S 5035 CA does not contain any ingredients listed on the SARA Title III, Section 313 List of Chemicals. HOSMAC-S 5035 CA, as sold, does not meet the criteria of a hazardous waste as defined under 40CFR 261, in that it does not exhibit the characteristics of a hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D. It is the end user's responsibility to determine the regulatory status of the waste at the time of disposal.

Section 16 Other Information

Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists
ANSI = American National Standards Institute
ASTM = American Society for Testing and Materials
CERCLA = Comprehensive Environmental Response and Liability Act
DOT = Department of Transportation
EPA = Environmental Protection Agency
IARC = International Agency for Research on Cancer
LD = Lethal Dose
NIOSH = National Institute of Occupational Health and Safety
NTP = National Toxicology Program
OSHA = Occupational Safety and Health Administration
PEL = Permissible Exposure Limit
SARA = Superfund Amendments and Reauthorization Act
TLV = Threshold Limit Value
TSCA = Toxic Substance Control Act
N.D. = Not Determined
N.Av. = Not Available
N.Ap. = Not Applicable

ALL STATEMENTS, INFORMATION AND DATA PROVIDED IN THIS MSDS ARE BELIEVED TO BE ACCURATE AND RELIABLE. THIS INFORMATION IS PRESENTED WITHOUT GUARANTEE OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION FOR THEIR PURPOSE. NOTHING IS INTENDED AS PERMISSION INDUCEMENT TO VIOLATE ANY LAWS. SELLER SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE OR LIABILITY RESULTING FROM THE USE OF THE PRODUCT IN THE BUYER'S MANUFACTURING PROCESS OR IN COMBINATION WITH OTHER SUBSTANCES.

Material Safety Data Sheet

HYDREX™ XV ALL SEASON



000003001240

Version 3.0

Revision Date 2015/10/05

Print Date 2015/10/05

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : HYDREX™ XV ALL SEASON

Product code : HDXASICT, HDXASP5R, HDXASP20, HDXASIBC,
HDXASDRR, HDXASDRM, HDXASDCT, HDXASC16,
HDXAS, HDXASBLK

Manufacturer or supplier's details

Petro-Canada Lubricants Inc.
2310 Lakeshore Road West
Mississauga ON L5J 1K2
Canada

Emergency telephone number : Suncor Energy: +1 403-296-3000;
Poison Control Centre: Consult local telephone directory for
emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : Hydrex XV All Season hydraulic oil is a premium hydraulic oil designed for year round use in hydraulic systems that are exposed to wide temperature extremes. It is specifically recommended for woodland, mining, construction, public utility and marine operations eliminating the need for seasonal changeovers.

Prepared by : Product Safety: +1 905-804-4752

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	viscous liquid
Colour	Bright, pale yellow.
Odour	Mild petroleum oil like.

Potential Health Effects

Primary Routes of Entry : Eye contact
Ingestion
Inhalation
Skin contact

Aggravated Medical Condition : None known.

Carcinogenicity:

IARC

No component of this product present at levels greater than or

Material Safety Data Sheet

HYDREX™ XV ALL SEASON

000003001240

Version 3.0

Revision Date 2015/10/05

Print Date 2015/10/05



equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical Name	CAS-No.	Concentration (%)
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	30 - 50 %

SECTION 4. FIRST AID MEASURES

- If inhaled : Artificial respiration and/or oxygen may be necessary.
Move to fresh air.
Seek medical advice.
- In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash skin thoroughly with soap and water or use recognized skin cleanser.
Wash clothing before reuse.
Seek medical advice.
- In case of eye contact : Remove contact lenses.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Obtain medical attention.
- If swallowed : Rinse mouth with water.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Never give anything by mouth to an unconscious person.
Seek medical advice.
- Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

SECTION 5. FIREFIGHTING MEASURES

Material Safety Data Sheet

HYDREX™ XV ALL SEASON

000003001240



Version 3.0

Revision Date 2015/10/05

Print Date 2015/10/05

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : No information available.
- Specific hazards during firefighting : Cool closed containers exposed to fire with water spray.
- Hazardous combustion products : Carbon oxides (CO, CO₂), smoke and irritating vapours as products of incomplete combustion.
- Further information : Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Material can create slippery conditions.
- Environmental precautions : Do not allow uncontrolled discharge of product into the environment.
- Methods and materials for containment and cleaning up : Prevent further leakage or spillage if safe to do so.
Remove all sources of ignition.
Soak up with inert absorbent material.
Non-sparking tools should be used.
Ensure adequate ventilation.
Contact the proper local authorities.

SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Use only with adequate ventilation.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid contact with skin, eyes and clothing.
Do not ingest.
Keep away from heat and sources of ignition.
Keep container closed when not in use.
- Conditions for safe storage : Store in original container.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep in a dry, cool and well-ventilated place.
Keep in properly labelled containers.
To maintain product quality, do not store in heat or direct sunlight.

Material Safety Data Sheet

HYDREX™ XV ALL SEASON

000003001240

Version 3.0

Revision Date 2015/10/05

Print Date 2015/10/05



SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	TWA (Mist)	5 mg/m ³	CA AB OEL
		STEL (Mist)	10 mg/m ³	CA AB OEL
		TWAEV (Mist)	5 mg/m ³	CA QC OEL
		STEV (Mist)	10 mg/m ³	CA QC OEL
		TWA (Mist)	1 mg/m ³	CA BC OEL
		TWA (Inhalable fraction)	5 mg/m ³	ACGIH

Engineering measures : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type : organic vapour filter

Hand protection
Material : neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R).

Remarks : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eye protection : Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Protective measures : Wash contaminated clothing before re-use.
No special protective equipment required.

Hygiene measures : Remove and wash contaminated clothing and gloves, including the inside, before re-use.
Wash face, hands and any exposed skin thoroughly after handling.

Material Safety Data Sheet

HYDREX™ XV ALL SEASON

000003001240

Version 3.0

Revision Date 2015/10/05

Print Date 2015/10/05



SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: viscous liquid
Colour	: Bright, pale yellow.
Odour	: Mild petroleum oil like.
Odour Threshold	: No data available
pH	: No data available
Pour point	: -48 °C (-54 °F)
Boiling point/boiling range	: No data available
Flash point	: 227 °C (441 °F) Method: Cleveland open cup
Fire Point	: No data available
Auto-Ignition Temperature	: No data available
Evaporation rate	: No data available
Flammability	: Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available
Density	: 0.8488 kg/l (15 °C / 59 °F)
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: 47.9 cSt (40 °C / 104 °F) 9.67 cSt (100 °C / 212 °F)
Explosive properties	: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: Hazardous polymerisation does not occur. Stable under normal conditions.
------------------------------------	---

Material Safety Data Sheet

HYDREX™ XV ALL SEASON

000003001240



Version 3.0

Revision Date 2015/10/05

Print Date 2015/10/05

Conditions to avoid : No data available

Incompatible materials : Reactive with oxidising agents and reducing agents.

Hazardous decomposition products : May release CO_x, H₂S, metal oxides, methacrylate monomers, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : Eye contact
Ingestion
Inhalation
Skin contact

Acute toxicity

Product:

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

Components:

lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based:

Acute oral toxicity : LD50 Rat: > 5,000 mg/kg,

Acute inhalation toxicity : LC50 Rat: > 5.2 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 Rabbit: > 2,000 mg/kg,

Skin corrosion/irritation

Product:

Remarks: No data available

Serious eye damage/eye irritation

Product:

Remarks: No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

Material Safety Data Sheet

HYDREX™ XV ALL SEASON

000003001240



Version 3.0

Revision Date 2015/10/05

Print Date 2015/10/05

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Aspiration toxicity

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil. Offer surplus and non-recyclable solutions to a licensed disposal company. Waste must be classified and labelled prior to recycling or disposal.

Material Safety Data Sheet

HYDREX™ XV ALL SEASON

000003001240

Version 3.0

Revision Date 2015/10/05

Print Date 2015/10/05



Send to a licensed waste management company.
Dispose of as hazardous waste in compliance with local and national regulations.
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulation

IATA-DGR

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

49 CFR

Not regulated as a dangerous good

TDG

Not regulated as a dangerous good

Special precautions for user

Not applicable

SECTION 15. REGULATORY INFORMATION

WHMIS Classification : Not controlled.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

The components of this product are reported in the following inventories:

DSL

On the inventory, or in compliance with the inventory

TSCA

All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.

IECSC

On the inventory, or in compliance with the inventory

EINECS

On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

For Copy of (M)SDS : The Canadian Controlled Products Regulations (CPR) (Under the Hazardous Products Act, part of the WHMIS legislation) only apply to WHMIS Controlled (i.e., hazardous) products. Therefore, the CPR and the 3-year update rule specified therein do not apply to WHMIS Non-Controlled products. Although this is true, customarily Petro-Canada reviews and updates Non-Controlled product MSDS if a customer requests such an update. These Non-Controlled product updates are

Material Safety Data Sheet

HYDREX™ XV ALL SEASON

000003001240

Version 3.0

Revision Date 2015/10/05

Print Date 2015/10/05



given a lower priority than Controlled products but are handled as soon as practicable. If you would like to verify if the MSDS you have is the most current, or you require any further information, please contact:

Internet: lubricants.petro-canada.ca/msds

Western Canada, telephone: 1-800-661-1199; fax: 1-800-378-4518

Ontario & Central Canada, telephone: 1-800-268-5850; fax: 1-800-201-6285

Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 1-800-201-6285

For Product Safety Information: 1 905-804-4752

Prepared by : Product Safety: +1 905-804-4752

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.



MATERIAL SAFETY DATA SHEET

Print date: 15-May-2014

Version 8

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product name: HEEF 25 RS CHROMIUM SALT
Product code: 1472182

Synonyms: No information available

Relevant identified uses of the substance or mixture and uses advised against

Use: Chemical plating of metals

Uses advised against Uses advised against Consumer Use

Supplier:	ATOTECH USA INC 1750 OVERVIEW DRIVE ROCK HILL, SC 29730 TELEPHONE: 803-817-3500 MONDAY - FRIDAY HOURS: 8:00am - 5:00pm EST	ATOTECH CANADA LTD. 1180 CORPORATE DRIVE BURLINGTON, ON., L7L 5R6 TELEPHONE: 905-332-0111 MONDAY - FRIDAY HOURS: 8:00am - 4:30pm EST
------------------	---	---

Emergency telephone numbers:

SPILLS AND TRANSPORT	CHEMTREC (USA): 800-424-9300 CANUTEC (CANADA): 613-996-6666
TRANSPORT MEDICAL	ROCKY MOUNTAIN POISON CONTROL CENTER: 303-623-5716

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Danger
Oxidizer
Corrosive
Toxic
Carcinogenic

This material is considered to be hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
 This material is a controlled product under WHMIS.

Potential health & environmental effects

Properties affecting health: Corrosive effects. Toxic if swallowed. Toxic in contact with skin. Toxic by inhalation.

Principle routes of exposure: Eyes. Skin. Respiratory system. Gastrointestinal tract.

Skin contact: Corrosive. Contact causes severe skin irritation and possible burns. Also toxic in contact with skin. Large exposures may be fatal. May cause sensitization by skin contact.

Eye contact: Corrosive to the eyes and may cause severe damage including blindness.

- Inhalation:** Corrosive. Causes severe burns. Also very toxic by inhalation. Causes inflammation and ulceration of the respiratory tract. May cause sensitization by inhalation.
- Ingestion:** Corrosive. Ingestion causes burns of the upper digestive and respiratory tracts. Toxic if swallowed. Liver and kidney injuries may occur.
- Physico-chemical properties:** Contact with combustible material may cause fire.
- Potential environmental effects:** Dangerous for the environment Toxic to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

Description: Mixture of organic and inorganic salts

INGREDIENTS (BY WEIGHT PERCENT)

Components	CAS-No	Weight %
Chromium trioxide	1333-82-0	60 - 100
Sodium sulfate	7757-82-6	< 0.1

This product may contain component (s) that are not listed under disclosure. All components not listed, do not contain hazardous materials above deminimus disclosure limits as defined by OSHA, NIOSH, ACGIH or Canadian WHMIS regulations and or guidelines. Please refer to other sections of the MSDS for information on safety, health and environmental guidelines and precautions.

4. FIRST AID MEASURES

- General advice:** Immediate medical attention is required.
- Skin contact:** Wash off immediately with plenty of water for at least 15 minutes. Call a physician or Poison Control Centre immediately. Remove and wash contaminated clothing before re-use.
- Inhalation:** Move to fresh air. Artificial respiration and/or oxygen may be necessary. Immediate medical attention is required.
- Eye contact:** Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.
- Ingestion:** Call a physician or Poison Control Center immediately. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.
- Notes to physician:** Overexposure to this product could lead to kidney failure and death. It has been reported that there is little value from chelating agents; however death has been avoided in several such cases through the use of early renal dialysis. Ascorbic acid by mouth or intravenously has been shown to be effective (converting Chrome VI to Chrome III) in preventing renal tubular failure. Continue to monitor for respiratory distress for 72 hours.
- Protection of first-aiders:** Use personal protective equipment.

5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media:** Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Extinguishing media which must not be used for safety reasons:** DO NOT use combustible materials such as sawdust.
- Special protective equipment for fire-fighters:** Standard procedure for chemical fires. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Use personal protective equipment.

Special hazards arising from the substance or mixture:	In case of fire hazardous decomposition products may be produced such as, chromium oxides, Oxygen, Contact with combustible material may cause fire.
Unusual hazards:	Containers may explode when involved in fire. Chromic acid reacts strongly with materials which are readily oxidized. Do not allow run-off from fire fighting to enter drains or water courses. Water runoff can cause environmental damage. Corrosive. Toxic. May cause or intensify fire; oxidizer.
Specific methods:	Water mist may be used to cool closed containers. Dike and collect water used to fight fire. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Flash Point:	The product is not flammable
Flash point test method:	Not applicable.
Autoflammability temperature:	Not applicable
Flammability Limits in Air:	
Lower:	Not applicable.
Upper:	Not applicable.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:	Avoid contact with skin, eyes and clothing. Prevent unauthorized access. For personal protection see section 8.
Environmental precautions:	Should not be released into the environment. Prevent product from entering drains. Do not flush into surface water or sanitary sewer system.
Methods for containment:	Prevent further leakage or spillage if safe to do so.
Methods for cleaning up:	Avoid formation of aerosol. Do not allow to dry. DO NOT use combustible materials such as sawdust. Soak up with inert absorbent material. Clean contaminated surface thoroughly. Use approved industrial vacuum cleaner for removal. Keep in suitable, closed containers for disposal. Dispose of in accordance with local regulations.

7. HANDLING AND STORAGE

Handling

Technical measures/precautions:	Use only in area provided with appropriate exhaust ventilation.
Safe handling advice:	Do not breathe vapors/dust. Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Do not ingest. For personal protection see section 8.

Storage

Technical measures/storage conditions:	Keep containers tightly closed in a dry, cool and well-ventilated place. Do not store near combustible materials. Keep locked-up.
Incompatible products:	See chapter: 10.
Shelf Life (days):	730

Storage Temperature

Keep above:	23 °F / -5°C
Keep below:	104 °F / 40°C

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures to reduce exposure:	Ensure adequate ventilation, especially in confined areas.
---	--

Individual protection measures

Respiratory protection:

In case of insufficient ventilation wear suitable respiratory equipment. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. .

Hand protection:

Wear protective gloves. The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

Skin and body protection:

Chemical resistant apron. Long sleeved clothing. Boots.

Eye protection:

Tightly fitting safety goggles. Face-shield. Ensure that eyewash stations and safety showers are close to the workstation location.

Hygiene measures:

Avoid contact with skin, eyes and clothing. Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke.



Exposure limits	ACGIH			OSHA			NIOSH		
	TWA	STEL	Ceilings	TWA	STEL	Ceilings	TWA	STEL	Ceilings
Chromium trioxide 1333-82-0	0.05 mg/m ³	-	-	5 µg/m ³	-	0.1 mg/m ³	0.001 mg/m ³	-	-
Sodium sulfate 7757-82-6	-	-	-	-	-	-	-	-	-

9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Solid	Color:	Red Brown to Violet
Odor:	Odorless	Specific gravity:	2.65 - 2.75
pH:	0 - 1	Boiling point:	> 212 °F (> 100 °C)
Melting point:	Not applicable.	Evaporation rate:	Not applicable.
Vapor density:	Not applicable.	Vapor pressure:	ca. 23 hPa
Water solubility:	Soluble	Solubility in other solvents:	No information available

Flash Point:	The product is not flammable	Flash point test method:	Not applicable.
Autoignition temperature:	Not applicable	Decomposition temperature:	Not applicable

Explosion limits:
Upper: Not applicable
Lower: Not applicable

VOC Content(%)**: 0%

** CAA (Clean Air Act) - Volatile Organic Components (VOCs)

10. STABILITY AND REACTIVITY

Stability: Stable under recommended storage conditions.

Materials to avoid: Readily oxidizable or combustible material. Metals. Bases. Cyanides. Combustible material.

- Conditions to avoid:** To avoid thermal decomposition, do not overheat. Incompatible products. Extremes of temperature and direct sunlight. Keep away from open flames, hot surfaces and sources of ignition. Do not allow to dry.
- Hazardous decomposition products:** In case of fire hazardous decomposition products may be produced such as, Chromium oxides, Carbon oxides, sulfur oxides.
- Polymerization:** None under normal processing.
- Hazardous reactions:** Gives off hydrogen by reaction with metals. Exothermic reaction. Explosive when mixed with combustible material.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Components	LD50/oral/rat	LC50/inhalation/rat	LD50/dermal/rabbit
Chromium trioxide - 1333-82-0	50 mg/kg	0.167 mg/L 4h	20 mg/kg
Sodium sulfate - 7757-82-6	10000 mg/kg	No information available	No information available

Product Information

LC50/inhalation/rat = No information available

LD50/dermal/rabbit = No information available

LD50/oral/rat = 51 mg/kg

Local effects

- Skin contact:** Corrosive. Causes burns. Toxic in contact with skin.
- Eye contact:** Corrosive to the eyes and may cause severe damage including blindness. Liquid causes severe inflammation of conjunctiva and may cause severe damage of the cornea.
- Inhalation:** Corrosive. Inhaled corrosive substances can lead to a toxic edema of the lungs. Causes inflammation and ulceration of the respiratory tract. Toxic by inhalation.
- Ingestion:** Corrosive. Ingestion causes burns of the upper digestive and respiratory tracts. Toxic if swallowed. May be fatal if swallowed.
- Sensitization** May cause sensitization by inhalation and skin contact.

Chronic toxicity

Chronic effects:

Repeated inhalation of chromic acid causes nasal perforation, skin ulceration, chronic rhinitis, pharyngitis, kidney and liver damage, inflammation of the larynx, changes in the blood and lung cancer. Carcinogenic effects caused by chromic acid and by alkaline or alkaline earth chromates and dichromates as well as zinc chromate. This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Specific effects

- Carcinogenic effects:** The National Toxicology Program (NTP) has designated Hexavalent Chromium Compounds as Known Human Carcinogens. The International Agency for Research on Cancer (IARC) has identified Hexavalent Chromium Compounds as Carcinogenic to Humans (group 1). The American Conference of Governmental Industrial Hygienists (ACGIH) has identified Water-Soluble Hexavalent Chromium Compounds as Confirmed Carcinogens.
- mutagenic effects** Mutagenic Category 1 May cause genetic defects
- Reproductive toxicity:** May impair fertility
- Target organ effects:** Skin. Eyes. Respiratory system. Kidney. Liver.

Carcinogenic substances

Components	NTP	IARC	OSHA	ACGIH	California Proposition 65 - Carcinogens
Chromium trioxide	X	1	X	X	X
Sodium sulfate	-	-	-	-	

12. ECOLOGICAL INFORMATION

Environmental hazard

Toxicity:	No data is available on the product itself.
Aquatic toxicity:	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
Mobility:	This product is soluble in water. Chromium may be transported from soil through runoff and leaching of water and through aerosol formation. The organic matter present in soil is expected to reduce soluble chromate to insoluble chromic oxide.
Bioaccumulative potential:	Bioaccumulation from soil to above ground parts of plants is unlikely. There is no evidence of accumulation in animals.

Components	Freshwater Algae	Freshwater Fish Species
Chromium trioxide - 1333-82-0	-	96 h LC50 (Colisa fasciatus) = 40 mg/L
Sodium sulfate - 7757-82-6	-	96 h LC50 (Lepomis macrochirus) = 13 mg/L 24 h LC50 (Pimephales promelas) = 13500 mg/L

Components	Microtoxicity	Water Flea
Chromium trioxide 1333-82-0	-	0.162 mg/l
Sodium sulfate 7757-82-6	-	48 h EC50 = 2564 mg/L 96 h EC50 = 4547 mg/L

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products: Dispose of in accordance with local regulations.

Contaminated packaging: Empty containers should be taken for local recycling, recovery or waste disposal.

14. TRANSPORT INFORMATION

DOT (USA)

UN-No (DOT): UN1463
 Proper shipping name DOT: CHROMIUM TRIOXIDE ANHYDROUS, MIXTURE
 Hazard Class (DOT): 5.1
 Subsidiary Class (DOT): 8,6.1
 Packing group (DOT): II
 Description (DOT): CHROMIUM TRIOXIDE ANHYDROUS, MIXTURE , 5.1(8,6.1), UN1463, PGII

TDG (Canada)

UN-No (TDG): UN1463
 Proper shipping name TDG: CHROMIUM TRIOXIDE ANHYDROUS, MIXTURE
 Hazard Class (TDG): 5.1
 Subsidiary Class (TDG): 8, 6.1
 Packing group (TDG): II
 Description (TDG): CHROMIUM TRIOXIDE ANHYDROUS, MIXTURE , 5.1(8, 6.1), UN1463, PGII, (TOXIC)

15. REGULATORY INFORMATION

International Inventories

All of the components in this product are on or exempt from the following inventories:

USA (TSCA), CANADA (DSL / NDSL), Europe (EINECS/ELINCS/NLP), Australia (AICS), Korea (ECL), China (IECSC), Japan (ENCS).

US Additional Information

No information available

International Inventory Legend

- TSCA: US - Toxic Substance Control Act
- DSL: Canada - Domestic Substance List
- NDSL: Canada - Non-Domestic Substance List
- IECSC: China - Inventory of Existing Chemical Substances China
- EINECS: EU Inventory of Existing Commercial Chemical Substances
- ELINCS: EU List of Notified Chemical Substances
- ECL: Korea - Existing Chemicals List
- AICS: Australia - Inventory of Chemical Substances
- ENCS: Japan - Existing and New Chemical Substances
- PICCS: Phillipines - Inventory of Chemicals and Chemical Substances

US Federal Regulations:

Components	SARA 302	SARA 313	CERCLA RQ	TSCA 12(b)	CWC	DEA	CCL
Chromium trioxide	-	X	-	X	-	-	-
Sodium sulfate	-	-	-	-	-	-	-

SARA 311	
Acute Health Hazard	YES
Chronic Health Hazard	YES
Fire Hazard	NO
Sudden Release of Pressure Hazard	NO
Reactive Hazard	NO

US State Regulations:

Product name: HEEF 25 RS CHROMIUM SALT

Components	California Proposition 65 - Carcinogens	California - Proposition 65 - Developmental Toxicity	California - Proposition 65 - Reproductive Toxicity - Female	California - Proposition 65 - Reproductive Toxicity - Male
Chromium trioxide	X	X	X	X
Sodium sulfate	-	-	-	-

Components	U.S. - New Jersey - Right to Know Hazardous Substance List	Massachusetts - Right To Know List	U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List	U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances
Chromium trioxide	Present	Carcinogen Extraordinarily hazardous	Present	Present
Sodium sulfate	-	Present	Present	-

U.S. Regulations Legend

TSCA 12(b): TSCA Section 12(b) - Export Notification
 SARA 302: CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs and TPQs
 SARA 313: CERCLA/SARA - Section 313 - Emission Reporting
 CERCLA RQ: CERCLA/SARA - Hazardous Substances and Their Reportable Quantities
 CWC: Chemical Weapons Convention - Annex on Chemicals
 DEA LISTED: DEA (Drug Enforcement Administration) - DEA Controlled, Precursors, and / or Essential Chemicals
 CCL: Commerce Control List, Part 774 of Export Administration Regulations, US Commerce Department

Canada Regulations:

This product has been classified in accordance with the criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

WHMIS Controlled List

Components	CAS-No	Call Out Threshold
Chromium trioxide	1333-82-0	0.1

WHMIS Hazard Class:

- C Oxidizing materials
- D1A Very toxic materials
- D2A Very toxic materials
- D2B Toxic materials
- E Corrosive material

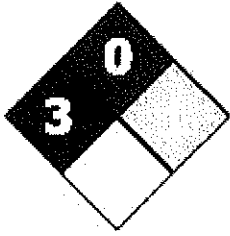


Substances currently restricted by WEEE/RoHS (European Directive 2002/96/EC , 2002/95/EC) or ELV (European Directive 2000/53/EC):

PBDE	PBB	Cr(VI)	Hg	Pb	Cd
-	-	>0.1%	-	-	-

16. OTHER INFORMATION

16. OTHER INFORMATION



NFPA: Health: 3Flammability: 0Instability: 1Other data: Oxy

CAREFULLY READ THE FOLLOWING: The identification of ingredients in this document meets or exceeds the requirements set forth in 29 CFR, 40 CFR, TDG et al. at the date of publication. Ingredients present in a mixture or solution which are generically identified or not referenced in this document are not regulatorily required to be specifically identified or referenced. The information contained herein should be provided to all those who will use, handle, store, transport, or may otherwise be exposed to this product.

THE INFORMATION CONTAINED HEREIN, TO THE BEST OF OUR KNOWLEDGE, IS CONSIDERED TO BE ACCURATE. SUCH INFORMATION IS OFFERED SOLELY FOR YOUR CONSIDERATION, INVESTIGATION, AND VERIFICATION, AND WE DO NOT SUGGEST OR GUARANTEE THAT ANY PRECAUTIONS, PROCEDURES, RECOMMENDATIONS ETC. ARE PREFERRED OR UNIQUE. ATOTECH USA INC. AND ATOTECH CANADA LTD. MAKE NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE USE OF THIS INFORMATION OR THE USE OF MATERIAL IDENTIFIED HEREIN, IN COMBINATION WITH ANY OTHER MATERIAL OR PROCESS, AND ASSUMES NO RESPONSIBILITY THEREFORE. THIS DOCUMENT WAS DEVELOPED UNDER THE REQUIREMENTS OF THE UNITED STATES AND CANADA, AND AS SUCH MAY NOT SATISFY OTHER STATE, PROVINCIAL OR REGIONAL REQUIREMENTS.

Prepared by: H.E.S. Department

()

()

()

NONE.

Safety Data Sheet



Product: HandMaster Pumicized Waterless Citrus Hand Cleaner

Manufactured and/or Distributed by: Penco Products, Inc. | 1820 Stonehenge Drive, Greenville, NC 27858

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name: HandMaster Pumicized Waterless Citrus Hand Cleaner
 Other Identifiers:
 Recommended Use: For Skin Cleansing
 SDS Supplier Address:
 Penco Products, Inc.
 1820 Stonehenge Drive
 Greenville, NC 27858 USA

Emergency Phone: 800-228-5635
 Non-Emergency Phone: 800-562-1000

SECTION 2: HAZARDS IDENTIFICATION

Classification:
 Hazard Category: Eye Damage/Irritation Category 2B
 Signal Word: Warning
 Hazard Statement: Causes Eye Irritation
 Precautionary Statement:
 Prevention: Wash hands thoroughly after handling
 Response: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 If eye irritation persists: Get medical advice/attention

SECTION 3: INFORMATION ON INGREDIENTS

Chemical Name: Hand Cleanser
 Classification: Mixtures
 This product meets the FDA definition of a cosmetic product.

Ingredient	Common Name/Synonyms	CAS Number	%
Poly(oxy-1,2-ethanediyl), a-undecyl-w-hydroxy-	Ethoxylated Alcohol Surfactant Tomadol 1-7 Undeceth-7	34398-01-1	1 - 5
Poly(oxy-1,2-ethanediyl), a-undecyl-w-hydroxy-	Ethoxylated Alcohol Surfactant Tomadol 1-3 Undeceth-3	34398-01-1	1 - 5
Remaining Ingredients	The specific chemical identity and/or exact percentage of composition has been withheld as a trade secret.		90 - 98

SECTION 4: FIRST AID MEASURES

General Information: It is unlikely that emergency treatment will be required.
 After Inhalation: Not a normal route of entry
 After Skin Contact: Wash off with water.
 After Eye Contact: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do so. Continue rinsing.
 If irritation persists: Get medical advice/attention.
 After Swallowing: Not a normal route of entry.
 Most important symptoms and effects: Contact with eyes may cause temporary burning and redness.
 Notes to Physician: Treat symptomatically.

Indication of any immediate medical attention and special treatment needed: No further relevant information is available.



SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing agents: CO₂, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

Specific hazards arising from the substance or mixture

Potential products of combustion Unknown

Advice for Firefighters

Protective Equipment In case of insufficient ventilation, wear suitable respiratory equipment.

Additional Information Cool endangered containers with water spray.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions Surfaces will become slippery if product is spilled.

Environmental Precautions: Do not allow to enter sewers, or surface or ground water.

Containment Methods: Ensure adequate ventilation. Prevent further spread of any spilled material, if safe to do so.

Methods for clean up: Absorb liquid components with liquid-binding material. Clean the affected area carefully with water.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling Avoid contact with eyes.

Requirements to be met by store rooms and receptacles

Storage Conditions Store in a cool, dry location, out of direct sunlight.

Incompatible Material None known based on information available

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Guidelines: This product presents no health hazards to the user when used according to labels directions for it's intended use.

Permissible or Recommended Exposure Limits for mixture

ACGIH Undetermined

NIOSH Undetermined

OSHA Undetermined

Appropriate Engineering Controls See section 7. No additional data available.

Individual Protective Measures

General hygienic measures: Wash hands before breaks and at the end of work.

Respiratory Protection: Not necessary if area is well ventilated.

Hand Protection: Not generally required.

Eye Protection: In case of splash risk, wear safety glasses.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

Form	Thick Lotion
Color	Green
Odor	Citrus
Odor Threshold	Not determined
pH Value	6 - 7
Specific Gravity	1.1

Change in Condition:

Melting Point / Melting Range	Not determined
Boiling Point / Boiling Range	100°C / 212°F
Freezing Point	32°F (0°C)
Flash Point	>210°F (>99°C)
Flammability (solid, gas)	Not Applicable
Ignition Temperature	Not determined
Decomposition Temperature	Not determined
Self Igniting	Product is not self-igniting
Danger of Explosion	Not determined

Explosion Limits	Not determined
Vapor Pressure at 20°C	Not determined
Density at 20°C	Not determined
Relative Density	Not determined
Vapor Density	Not determined
VOC Contribution	0% by weight
Evaporation Rate	Not determined
Solubility in / Miscibility with water	Soluble (liquid portion)
Partition coefficient (n-octanol/water)	Not determined
Viscosity	
Dynamic	Not determined
Kinematic	Not determined

SECTION 10: STABILITY AND REACTIVITY

Reactivity:	Normally non-reactive
Chemical Stability:	Stable if used as directed
Possibilities of Hazardous Reactions:	None known
Conditions to Avoid:	None known
Incompatible Materials:	None known
Hazardous Decomposition Products:	None known

SECTION 11: TOXICOLOGICAL INFORMATION

Likely Routes of Exposure:	Skin, Eye
Symptoms of Exposure	
Skin Exposure	Long term or excessive use may cause dryness.
Eye Exposure	Contact will cause burning and irritation.
Chronic Effects	None Known
Acute Toxicity	Not Tested
Carcinogenicity	None of the chemicals used in this product have been found to be carcinogenic by NTP, IARC, OSHA, or ACGIH



SECTION 12: ECOLOGICAL INFORMATION

Toxicity	
Aquatic Toxicity	Not Tested
Persistence and Degradability	Not Tested
Behavior in Environmental Systems	
Bioaccumulative Potential	Not Tested
Mobility in Soil	Not Tested
Ecotoxicological Effects	
Behavior in Sewage Processing Plants	Not Tested

SECTION 13: DISPOSAL CONSIDERATIONS

Dispose of in accordance with applicable local, state and federal regulations.

SECTION 14: TRANSPORTATION INFORMATION

UN Number	
DOT, IMDG, IATA	Unregulated
UN Proper Shipping Name	
DOT	Unregulated
IMDG	Unregulated
IATA	Unregulated
Environmental Hazard	
Marine Pollutant	Unknown
Special Precautions for the user	None

SECTION 15: REGULATORY INFORMATION

All ingredients used in this product are listed in the TSCA Inventory.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

This product meets the definition of a cosmetic per The US Food and Drug Administration.

SECTION 16: OTHER INFORMATION

HMIS:

Health: 1 Flammability: 0 Toxicity: 0 Personal Protection: not determined

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Abbreviations and acronyms:

DOT: Department of Transportation (USA)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

ICAO: International Civil Aviation Organization

TSCA: Toxic Substance Control Act (USA)

CPR: Controlled Products Regulations (Canada)

GHS: Globally Harmonized System of Classification and Labeling of Chemicals

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent



The information in this MSDS concerns the product mentioned in heading 1 and is given on the assumption that the product will be used in a way and for purposes indicated by the manufacturer. The information above is believed to be accurate and represents the best information currently available to us. Users should make their own investigations to determine the suitability of the information for their particular purposes. It is recommendable to pass the information from this MSDS, if necessary adjusted, to personnel/ party concerned.

Prepared: July 17, 2013

Revised: November 4, 2014



Material Safety Data Sheet

GEAR GLX SERIES

(80W-140, 80W-90, LS 80W-90, 85W-140, 90)

Material Identification and Use

Manufacturer's Name	NOCO Energy Corp..
Manufacturer's Address	2440 Sheridan Dr., Tonawanda, NY 14150 (U.S. and Canada)
Emergency Phone Number	1-800-424-9300 (Chemtrec)
Supplier's Address	P.O. Box 86, Tonawanda, NY 14151
Supplier Emergency Phone Number	1-800-500-6626
Product Name	Gear GLX Series
Product Code	NOC2314 GLX 80W-140 NOC2316 GLX 80W-90, LS 80W-90 NOC2317 GLX 85W-140 NOC2318 GLX 90
Chemical Name and Synonym	Petroleum Hydrocarbon
Formula	N/A
Product Use	Formulated with high quality base stocks and additives without zinc in compliance with Eaton, General Motors, and International Harvester requirements for truck driving axles.

Chemical Ingredients

Product Components	% (Volume)	CAS Number
Solvent Refined Residual Oil	55 - 95	64742-01-4
Solvent Refined Heavy Paraffinic Distillate	2 - 40	64741-88-4
Additives	5 - 15	Mixture
WHMIS classification	Not Controlled	

Physical Properties

Physical Form	Liquid
Color	Brown

Odor	Dark Pale
Appearance	Liquid
Specific Gravity	0.8922
Vapor Pressure (mm HG @ 20° C)	0
Vapor Density	Not Volatile
Evaporation Rate	Not Determined
Boiling Point	> 330°C (>625°F)
Freezing Point	N/A
pH	N/A
Solubility in H2O	0 at 20°C
Melting Point	Less than -27°C (-16°F)
Viscosity SUS at 100°F	> or = 100
Stability	Product is stable under normal conditions

Fire and Explosion Hazards

Conditions of Flammability	Addition of water or foam may cause frothing. Do not cut, drill or weld empty containers.
Extinguishing Agents	Foam, Water Fog, Dry Chemical, Carbon Dioxide. Closed containers exposed to fire may be cooled with water.
Flashpoint and Method of Determination	420°F (215°C) , COC
Flammable Limits in Air % B. V. Upper	Not Determined
Flammable Limits in Air % B. V. Lower	Not Determined
NFPA - Hazard Class	Health:1 Fire:1 Reactivity:0
Hazardous Combustion Products	From Burning; carbon monoxide, carbon dioxide and oxides of phosphorous.
Unusual Fire an Explosion Hazard	Do not cut, weld, braze, solder, drill, grind or expose containers, drums, tanks, etc. of product to heat, flame, sparks, static electricity or other sources of ignition; they may ignite explosively.
Special Fire Fighting Procedures	Wear self contained breathing apparatus when fire fighting in a confined space. Do not use water except as fog.

Reactivity Data

Chemical Stability	Stable
--------------------	--------

Incompatible Materials	Keep away from strong oxidizing agents, such as, hydrogen peroxide, Bromine, chlorine and chomic acid.
Hazardous Decomposition	Oxides of Carbon, Sulfur, Phosphates, and minor amounts of H ₂ S.
Hazardous Polymerization	Material is not known to polymerize.

Health Hazard Information

Routes of Entry

Skin Contact	Prolonged or repeated contact with skin may cause mild irritation and possibly dermatitis.
Eye	Mildly irritating to eyes.
Inhalation	If heated, sprayed or misted, may cause chemical pneumontis.
Ingestion	Low toxicity on ingestion. Has laxative effect.
Carcinogenicity	Not listed as a carcinogenic.
Health Hazard Data	Permissible Concentrations (air): see COMMENTS section Chronic effects of overexposure: no data available Acute toxicological properties: no data available

Emergency and First Aid Procedures

Eyes	In case of contact, immediately flush eyes with large amounts of water for at least 15 minutes. Get medical attention.
Skin	Remove excess with cloth or paper. Wash skin thoroughly with soap and water or waterless hand cleaner. If irritation occurs, get medical attention.
Inhalation	If breathing is difficult, remove victim to fresh air, give artificial respiration if not breathing. Call a physician.
Ingestion	Do not ingest. If ingested, do not induce vomiting. Contact a physician immediately.

Special Protection / Preventative Measures Information

Ventilation Requirements	Use explosion proof ventilation as required to control vapor concentration. See COMMENTS section.
Respiratory Protection	If vapor concentration exceeds permissible exposure use NIOSH / MSHA certified respirator with dual organic vapor, mist and particulates cartridge.

Eye Protection	Safety glasses with side shields or goggles. (Chemical safety goggles)
Protective Gloves	Neoprene Type
Personal Hygiene	Wear effective plant clothing. Contaminated clothing should be removed and washed in soap and water. Cleanse skin thoroughly before meals with soap and water. Shower and eyewash facilities should be accessible.
Additional Protective Equipment	None
Note	N/A

Environmental Procedures

Spills or Releases	If material is spilled or released to the atmosphere, steps should be taken to prevent discharges to streams or sewer systems. Transfer bulk of mixture into another container. Absorb residue with inert material such as earth, sand, or vermiculate. Sweep up and dispose as solid waste in accordance with local, state, and federal regulations. Spills or releases should be reported, if required to the appropriate local, state and federal regulatory agencies.
Waste Disposal	Clean up action should be carefully planned and executed. Shipment, storage and/or disposal of waste materials are regulated and action to handle or dispose of spilled or released materials must meet all state, local, and federal rules.
Storage	Protect against physical damage. Separate from oxidizing materials. Store in cool well ventilated area of non-combustible construction away from possible sources of ignition. Do not handle or store at temperatures over (maximum storage temperature) 60°C (140°F)

Regulatory Information

Dept. of Transportation	DOT Shipping Name: NONE Hazard Class: NONE ID Number: NONE Special Transportation Notes - NONE
TSCA	All Components are Listed on EPA/TSCA Inventory.
CERCLA	This product is classified as an oil under section 311. Spills into or leading to surface water that cause sheen must be reported to the National Response Center at 1-800-424-8802.
RCRA	If this product becomes a waste it would not be a hazardous waste by RCRA - 40 CFR 261. Place in

	an appropriate disposal facility in compliance with local authorities.
SARA Title III - Section 302	Not Applicable
Section 311/312	Not Applicable
Section 313	This product does not contain any chemical in sufficient quantity to be subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.
Reportable Quantity	N/A
Freight Classification	Petroleum Lubricating Oil

Comments

If used in applications where a mist may be generated, observe a TWA/PEL of 5 mg/m³ for mineral oil mist (OSHA and ACGIH).

All components of this product are on the US TSCA Inventory and Canadian Domestic Substance List.

The additive manufacturers have declared the additive mixtures in this product a trade secret.

Preparation Date of Material Safety Data Sheet

Prepared By	Robert M. Kellam (814) 368-1317 Tom Scoda (585) 924-4130
Phone number of Preparer	1-800-500-6626
Date Prepared	06/29/2000
Revised Date	06/01/2008

Disclaimer

We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind, express or implied, and we assume no responsibility for an loss, damage, or expense, direct or consequential, arising out of their use.



SAFETY DATA SHEET

Revision Date 05/20/2015

1. IDENTIFICATION

Product Identifier

Product Name **Fluid Film[®] Aerosol (AS)**
 Product Type Liquid, lubricant, Corrosion inhibitor

Other means of identification

Synonyms None

Recommended use of the chemical and restrictions on use

Recommended Use Corrosion inhibitor, lubricant
 Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier Name Eureka Chemical Company
 Supplier Address 234 Lawrence Ave
 South San Francisco, CA 94080
 US
 Supplier Phone Number Phone: 650-761-3536
 Fax: 650-589-1943
 Contact Phone: 1-650-761-3536
 Supplier Email info@fluid-film.com
 Emergency telephone number Chemtrec (800) 424-9300

2. HAZARDS IDENTIFICATION


Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Flammable Aerosols	Category 1
--------------------	------------

GHS Label elements, including precautionary statements

Emergency Overview

Signal word	Danger
Hazard Statements	Extremely flammable aerosol
	
Appearance Straw-colored liquid	Physical State Liquid spray Aerosol
	Odor Mild piney odor

Precautionary Statements - Prevention

Obtain special instructions before use.
 Do not handle until all safety precautions have been read and understood.
 Use personal protective equipment as required.
 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
 Pressurized container: Do not pierce or burn, even after use.
 Do not spray on an open flame or other ignition source.

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention

Precautionary Statements - Storage

Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F

Precautionary Statements - Disposal

Product should be disposed of via authorized waste disposal contractors in accordance with all local and national regulations.

Hazards not otherwise classified (HNOC)

Not applicable

Unknown Toxicity

No information available.

Other information

No information available.

Interactions with Other Chemicals

No information available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight-%	Trade Secret
Refined petroleum oil, hydrotreated heavy paraffinic	64742-54-7	40 - 80	*
Petroleum gases, liquified, sweetened	68476-86-8	1 - 25	*
Calcium petroleum sulfonate	61789-86-4	1 - 10	*

*The exact percentage (concentration) of composition has been withheld as a trade secret

4. FIRST AID MEASURES

First aid measures**General Advice**

Show this safety data sheet to the doctor in attendance.

Eye Contact

Rinse thoroughly with plenty of water for at least 15 minutes, also under the eyelids. If symptoms persist, call a physician.

Skin Contact

Wipe excess material from the skin with a cloth, followed by washing with soap and water. A waterless skin cleanser is beneficial in removing the material from the skin. In the case of skin irritation or allergic reactions, see a physician.

Inhalation

If respiratory symptoms develop, remove to fresh air. If symptoms persist, call a physician.

Ingestion

Do NOT induce vomiting. Drink plenty of water. If symptoms persist, call a physician.

Self-protection of the first aider Ensure that medical personnel are aware of the material(s) involved.

Most important symptoms and effects, both acute and delayed

Most Important Symptoms and Effects No information available.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Dry chemical. Carbon dioxide (CO2). Foam.

Unsuitable Extinguishing Media

DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.

Specific Hazards Arising from the Chemical

Some may burn but none ignite readily. Ruptured cylinders may rocket.

Uniform Fire Code Aerosols: Level III

Hazardous Combustion Products

Carbon oxides.

Explosion Data

Sensitivity to Mechanical Impact No.

Sensitivity to Static Discharge Yes.

Protective equipment and precautions for firefighters

Move containers from fire area if you can do it without risk. Damaged cylinders should be handled only by specialists.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Stop leak if you can do it without risk.

Other Information Ventilate the area.

Environmental Precautions

Environmental Precautions Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling Handle in accordance with good industrial hygiene and safety practice. Do not puncture or incinerate cans. Contents under pressure. Avoid breathing vapors or mists. Avoid contact with eyes. Keep away from open flames, hot surfaces and sources of ignition.

Conditions for safe storage, including any incompatibilities

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from sunlight. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Keep in properly labeled containers. Do not store near combustible materials. Keep in an area equipped with sprinklers.

Incompatible Products None known based on information supplied.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Refined petroleum oil, hydrotreated heavy paraffinic 64742-54-7	TWA: 5 mg/m ³ , as oil mist, mineral STEL: TWA: 10 mg/m ³ , as oil mist, mineral	TWA: 5 mg/m ³ , as oil mist, mineral	

ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits NIOSH IDLH Immediately Dangerous to Life or Health

Other Exposure Guidelines Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992) See section 15 for national exposure control parameters

Appropriate engineering controls

Engineering Measures Showers
Eyewash stations
Ventilation systems

Individual protection measures, such as personal protective equipment

Eye/Face Protection No special protective equipment required. Use chemical eye goggles in tanks and confined spaces.

Skin and Body Protection Wear protective gloves and protective clothing.

Respiratory Protection No protective equipment is needed under normal use conditions. Use approved respirator with organic vapor cartridges in tanks and confined spaces. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Physical State Liquid spray Aerosol

Appearance	Amber	Odor	Mild piney odor
Color	Straw-colored	Odor Threshold	No information available
<u>Property</u>	<u>Values</u>	<u>Remarks/ Method</u>	
pH	7.8	None known	
Melting / freezing point	No data available	None known	
Boiling point / boiling range	No data available	None known	
Flash Point	207 C / 405 F (less propellant)	None known	
Evaporation Rate	No data available	None known	
Flammability (solid, gas)	No data available	None known	
Flammability Limit in Air			
Upper flammability limit	No data available		
Lower flammability limit	No data available		
Vapor pressure	No data available	None known	
Vapor density	No data available	None known	
Specific Gravity	0.880 (less propellant)	None known	
Water Solubility	Insoluble in water	None known	
Solubility in other solvents	No data available	None known	
Partition coefficient: n-octanol/water	No data available	None known	
Autoignition temperature	No data available	None known	
Decomposition temperature	No data available	None known	
Kinematic viscosity	No data available	None known	
Dynamic viscosity	No data available	None known	
Explosive properties	No data available		
Oxidizing Properties	No data available		

Other Information

Softening Point	No data available
VOC Content (%)	< 25% (CARB 310)
VOC Content	< 219 g/L
Particle Size	No data available
Particle Size Distribution	

10. STABILITY AND REACTIVITY

Reactivity

No data available.

Chemical stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Hazardous Polymerization

Hazardous polymerization does not occur.

Conditions to avoid

Heat, flames and sparks.

Incompatible materials

None known based on information supplied.

Hazardous Decomposition Products

Carbon oxides.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information	Product does not present an acute toxicity hazard based on known or supplied information.
Inhalation	Specific test data for the substance is not available.
Eye Contact	Minimally irritating.
Skin Contact	Prolonged contact could cause skin irritation.
Ingestion	> 5000 mg/kg (Rat)

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Calcium petroleum sulfonate 61789-86-4	> 5000 mg/kg (Rat)	> 4000 mg/kg (Rabbit)	-

Information on toxicological effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization No information available.

Mutagenic Effects There is no data available for this product.

Carcinogenicity Contains no known carcinogens.

Reproductive Toxicity No information available.

STOT - single exposure No information available.

STOT - repeated exposure No information available.

Chronic Toxicity No information available.

Target Organ Effects No information available.

Aspiration Hazard No information available.

Numerical measures of toxicity Product Information

The following values are calculated based on chapter 3.1 of the GHS document
Not applicable

12. ECOLOGICAL INFORMATION

Ecotoxicity

No information available.

Persistence and Degradability

No information available.

Bioaccumulation

No information available.

Other adverse effects

No information available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal methods

Product should be disposed of via authorized waste disposal contractors in accordance with all local and national regulations. Consult the appropriate state, regional, or local regulations for additional requirements.

Contaminated Packaging

Dispose of contents/containers in accordance with local regulations.

14. TRANSPORT INFORMATION

DOT

Proper Shipping Name	CONSUMER COMMODITY
Hazard Class	ORM-D
Description	CONSUMER COMMODITY, ORM-D
Emergency Response Guide Number	126

TDG

UN-No.	UN1950
Proper Shipping Name	AEROSOLS
Hazard Class	2.1
Description	UN1950, AEROSOLS, 2.1

MEX

UN-No.	UN1950
Proper Shipping Name	AEROSOLS
Hazard Class	2.1
Description	UN1950, AEROSOLS, 2.1

ICAO

UN-No.	UN1950
Proper Shipping Name	AEROSOLS
Hazard Class	2.1
Description	UN1950, AEROSOLS, 2.1

IATA

UN-No.	UN1950
Proper Shipping Name	AEROSOLS, FLAMMABLE
Hazard Class	2.1
Description	UN1950, AEROSOLS, FLAMMABLE, 2.1

IMDG/IMO

UN-No.	UN1950
Proper Shipping Name	AEROSOLS
Hazard Class	2.1
EmS No.	F-D, S-U
Description	UN1950, AEROSOLS, 2.1

RID

UN-No.	UN1950
Proper Shipping Name	AEROSOLS
Hazard Class	2.1
Classification code	5F
Description	UN1950, AEROSOLS, 2.1

ADR

UN-No.	UN1950
Proper Shipping Name	AEROSOLS
Hazard Class	2.1
Classification code	5F
Tunnel restriction code	(D)
Description	UN1950, AEROSOLS, 2.1

ADN

UN-No.	UN1950
Proper Shipping Name	AEROSOLS
Hazard Class	2.1
Classification code	5F
Special Provisions	190, 327, 344, 625
Description	UN1950, AEROSOLS, 2.1
Limited Quantity	1 L
Ventilation	VE01, VE04

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL	All components are listed either on the DSL or NDSL.

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
 DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

US Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	Yes
Sudden release of pressure hazard	Yes
Reactive Hazard	No

VOC Regulations

This product complies with the consumer product VOC limits of CARB, the US EPA and states adopting the OTC VOC rules.

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania	Rhode Island	Illinois
Propane 74-98-6	X	X	X		
N-Butane 106-97-8	X	X	X		
Isobutane 75-28-5	X	X	X		
1,1-Difluoroethane 75-37-6	X	X			

International Regulations

Canada

WHMIS Hazard Class

A - Compressed gases

B5 - Flammable aerosol



16. OTHER INFORMATION

NFPA	Health Hazards 0	Flammability 4	Instability 0	Physical and Chemical Hazards -
HMIS	Health Hazards 0	Flammability 4	Physical Hazard 0	Personal Protection X

Chronic Hazard Star Legend * = Chronic Health Hazard

Prepared By Product Stewardship
23 British American Blvd.
Latham, NY 12110
1-800-572-6501

Revision Date 05/20/2015

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

The supplier identified below generated this SDS using the UL SDS template. UL did not test, certify, or approve the substance described in this SDS, and all information in this SDS was provided by the supplier or was reproduced from publicly available regulatory data sources. UL makes no representations or warranties regarding the completeness or accuracy of the information in this SDS and disclaims all liability in connection with the use of this information or the substance described in this SDS. The layout, appearance and format of this SDS is © 2014 UL LLC. All rights reserved.

End of Safety Data Sheet

SAFETY DATA SHEET



DUJEL 1200

Section 1. Identification

GHS product identifier : DUJEL 1200
Product code : 11592330, 11592470, 11592700
SDS # : MS0127217
Other means of identification : Not available.
Product type : Liquid.

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Alkaline gel cleaner
Supplier/Manufacturer : DuBois Chemicals, Inc. DuBois Chemicals Canada, Inc.
3630 E. Kemper Road 1155 North Service Road West
Cincinnati, Ohio 45241 Unit 6
Phone: 1-800-438-2647 Oakville, Ontario, L6M 3E3 Canada
Phone: 1-866-861-3603
Emergency telephone number : 1-866-923-4919 (US and Canada)
01-651-523-0314 (Int'l and Mexico)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture : CORROSIVE TO METALS. - Category 1
SKIN CORROSION/IRRITATION - Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1

GHS label elements

Hazard pictograms :



Signal word : Danger
Hazard statements : May be corrosive to metals.
Causes severe skin burns and eye damage.

Precautionary statements

Prevention : Wear protective gloves. Recommended: Chemical-resistant gloves. Wear eye or face protection; Recommended: splash goggles. Wear protective clothing. Keep only in original container. Wash hands thoroughly after handling. Do not breathe dust or mist.
Response : Absorb spillage to prevent material damage. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up. Store in corrosive resistant container with a resistant inner liner.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Ingredient name	%	CAS number
sodium hydroxide	5 - 10	1310-73-2

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
- Inhalation** : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Get medical attention immediately. Call a poison center or physician. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system.
- Skin contact** : Causes severe burns.
- Ingestion** : May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness
- Inhalation** : No specific data.

Section 4. First aid measures

- Skin contact** : Adverse symptoms may include the following:
 pain or irritation
 redness
 blistering may occur
- Ingestion** : Adverse symptoms may include the following:
 stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : No specific treatment.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.
- Specific hazards arising from the chemical** : In a fire or if heated, a pressure increase will occur and the container may burst.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
 carbon dioxide
 carbon monoxide
 sulfur oxides
 metal oxide/oxides
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Absorb spillage to prevent material damage. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Absorb spillage to prevent material damage. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from acids. Empty containers retain product residue and can be hazardous. Do not reuse container. Absorb spillage to prevent material damage.
- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store in corrosive resistant container with a resistant inner liner. Store locked up. Separate from acids. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	CAS #	ACGIH	OSHA	Mexico
sodium hydroxide	1310-73-2	C: 2 mg/m ³	TWA: 2 mg/m ³ 8 hours.	LMPE-Pico: 2 mg/m ³

- Engineering measures** : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Personal protection**
- Respiratory** : If a risk assessment indicates this is necessary, use a properly fitted, air-purifying or airfed respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. Recommended: splash goggles
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Personal protective equipment (Pictograms)



Section 9. Physical and chemical properties

Appearance

Physical state	: Liquid.
Color	: Green
Odor	: Not available.
Odor threshold	: Not available.
pH	: 13.8
Melting point	: Not available.
Boiling point	: Not available.
Flash point	: Closed cup: >93.333°C (>200°F) [Pensky-Martens (ASTM D93)] [Product does not sustain combustion.]
Burning time	: Not applicable.
Burning rate	: Not applicable.
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: Not available.
Relative density	: 1.083
Solubility	: Easily soluble in the following materials: cold water and hot water.
Solubility in water	: Not available.
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: Not available.
Elemental Phosphorus	: 0 %
VOC content	: Not available.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.
Incompatible materials	: Extremely reactive or incompatible with the following materials: oxidizing materials and acids.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Storage	: Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store in corrosive resistant container with a resistant inner liner. Store locked up. Separate from acids. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 11. Toxicological information

Information on toxicological effects

Carcinogenicity

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
ethanol	A3	1	-	-	-	-

Information on the likely routes of exposure : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

Eye contact : Causes serious eye damage.
Inhalation : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system.
Skin contact : Causes severe burns.
Ingestion : May cause burns to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
 pain
 watering
 redness
Inhalation : No specific data.
Skin contact : Adverse symptoms may include the following:
 pain or irritation
 redness
 blistering may occur
Ingestion : Adverse symptoms may include the following:
 stomach pains

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.
Carcinogenicity : No known significant effects or critical hazards.
Mutagenicity : No known significant effects or critical hazards.
Teratogenicity : No known significant effects or critical hazards.
Developmental effects : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	6060.6 mg/kg
Dermal	14666.7 mg/kg

Section 12. Ecological information

toxicity : Not available.

Aquatic ecotoxicity

Not available.

Section 13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

RCRA classification : D002 [corrosive]

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport information

IATA/IMDG/DOT/TDG: Please refer to the Bill of Lading/receiving documents for up to date shipping information.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 12(b) one-time export:** No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
Clean Water Act (CWA) 311: sodium hydroxide
CERCLA: Hazardous substances.: sodium hydroxide: 1000 lbs. (454 kg);

EPA Registration Number : Not available.

Clean Air Act Section 112 : Not listed

(b) Hazardous Air Pollutants (HAPs)

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Immediate (acute) health hazard

State regulations

Massachusetts : The following components are listed: SODIUM HYDROXIDE

New York : The following components are listed: Sodium hydroxide

New Jersey : The following components are listed: SODIUM HYDROXIDE; CAUSTIC SODA; ETHYL ALCOHOL; ALCOHOL

Pennsylvania : The following components are listed: SODIUM HYDROXIDE (NA(OH)); DENATURED ALCOHOL

California Prop. 65

Not available.

Canada

Canadian lists

Section 15. Regulatory information

- Canadian NPRI** : None of the components are listed.
Canada inventory : All components are listed or exempted.
Canadian PCP/DIN Number : Not available.

International regulations

- International lists** :
- Australia inventory (AICS)**: All components are listed or exempted.
 - China inventory (IECSC)**: All components are listed or exempted.
 - Japan inventory**: All components are listed or exempted.
 - Korea inventory**: Not determined.
 - Malaysia Inventory (EHS Register)**: Not determined.
 - New Zealand Inventory of Chemicals (NZIoC)**: Not determined.
 - Philippines inventory (PICCS)**: Not determined.
 - Taiwan inventory (CSNN)**: Not determined.

Section 16. Other information

History

- Date of printing** : 7/16/2015.
Date of issue/Date of revision : 7/16/2015.
Date of previous issue : 7/15/2015.
Version : 4

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SAFETY DATA SHEET



DUJEL 200

Section 1. Identification

GHS product identifier : DUJEL 200
Product code : 11630100, 11630470, 11630330, 11630470DK, 11630100DK
SDS # : DUB00116
Other means of identification : Not available.
Product type : Liquid.

Relevant identified uses of the substance or mixture and uses advised against

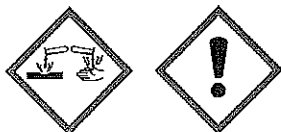
Identified uses : Acid gel cleaner
Supplier/Manufacturer : DuBois Chemicals, Inc. DuBois Chemicals Canada, Inc.
3630 E. Kemper Road 1155 North Service Road West
Cincinnati, Ohio 45241 Unit 6
Phone: 1-800-438-2647 Oakville, Ontario, L6M 3E3 Canada
Phone: 1-866-861-3603
Emergency telephone number : 1-866-923-4919 (US and Canada)
01-651-523-0314 (Int'l and Mexico)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture : ACUTE TOXICITY: ORAL - Category 4
SKIN CORROSION/IRRITATION - Category 1
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
SKIN SENSITIZATION - Category 1

GHS label elements

Hazard pictograms :



Signal word :

Danger

Hazard statements :

Harmful if swallowed.
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.

Precautionary statements

Prevention :

Wear eye/face protection. Wear protective gloves. Wear protective clothing. Avoid breathing vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.

Response :

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage :

Store locked up.

Disposal :

Dispose of contents and container in accordance with all local, regional, national and international regulations.

Section 2. Hazards identification

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Ingredient name	%	CAS number
urea hydrochloride	20 - 30	506-89-8
Ethanol, 2,2'-iminobis-, N-tallow alkyl derivs.	1 - 5	61791-44-4

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
- Inhalation** : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Skin contact** : Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : Causes severe burns. May cause an allergic skin reaction.
- Ingestion** : Harmful if swallowed. May cause burns to mouth, throat and stomach.

Section 4. First aid measures

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
- Ingestion** : Adverse symptoms may include the following:
stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.
- See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.
- Specific hazards arising from the chemical** : In a fire or if heated, a pressure increase will occur and the container may burst.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
halogenated compounds
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

- Large spill** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). The spilled material may be neutralized with sodium carbonate, sodium bicarbonate or sodium hydroxide. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from alkalis. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Separate from alkalis. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

- Engineering measures** : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

- Respiratory** : If a risk assessment indicates this is necessary, use a properly fitted, air-purifying or airfed respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. Recommended: splash goggles
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Section 8. Exposure controls/personal protection

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Personal protective equipment (Pictograms) :



Section 9. Physical and chemical properties

Appearance

Physical state	: Liquid.
Color	: Red.
Odor	: Not available.
Odor threshold	: Not available.
pH	: <2
Melting point	: Not available.
Boiling point	: Not available.
Flash point	: Closed cup: >93.333°C (>200°F) [Pensky-Martens (ASTM D93)] [Product does not sustain combustion.]
Burning time	: Not applicable.
Burning rate	: Not applicable.
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: Not available.
Relative density	: 1.103
Solubility	: Easily soluble in the following materials: cold water and hot water.
Solubility in water	: Not available.
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: Not available.
Elemental Phosphorus	: 0 %
VOC content	: Not available.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.
Incompatible materials	: Not available.

Section 10. Stability and reactivity

- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Separate from alkalis. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 11. Toxicological information

Information on toxicological effects

- Information on the likely routes of exposure** : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : Causes severe burns. May cause an allergic skin reaction.
- Ingestion** : Harmful if swallowed. May cause burns to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
- Ingestion** : Adverse symptoms may include the following:
stomach pains

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Long term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Potential chronic health effects

Not available.

- General** : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.
- Carcinogenicity** : No known significant effects or critical hazards.
- Mutagenicity** : No known significant effects or critical hazards.
- Teratogenicity** : No known significant effects or critical hazards.
- Developmental effects** : No known significant effects or critical hazards.

Section 11. Toxicological information

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	1674.5 mg/kg

Section 12. Ecological information

Ecotoxicity : Not available.

Aquatic ecotoxicity

Not available.

Section 13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

RCRA classification : D002 [corrosive]

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport information

IATA/IMDG/DOT/TDG: Please refer to the Bill of Lading/receiving documents for up to date shipping information.

Section 15. Regulatory information

U.S. Federal regulations : TSCA 12(b) one-time export: No products were found.
 TSCA 12(b) annual export notification: No products were found.
 United States inventory (TSCA 8b): All components are listed or exempted.

EPA Registration Number : Not available.

Clean Air Act Section 112 : Not listed

(b) Hazardous Air Pollutants (HAPs)

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Immediate (acute) health hazard
 Delayed (chronic) health hazard

State regulations

Massachusetts : None of the components are listed.

New York : None of the components are listed.

Section 15. Regulatory information

New Jersey : None of the components are listed.

Pennsylvania : None of the components are listed.

California Prop. 65

Not available.

Canada

Canadian lists

Canadian NPRI : None of the components are listed.

Canada inventory : All components are listed or exempted.

Canadian PCP/DIN Number : Not available.

International regulations

International lists :

- Australia inventory (AICS)**: All components are listed or exempted.
- China inventory (IECSC)**: All components are listed or exempted.
- Japan inventory**: Not determined.
- Korea inventory**: Not determined.
- Malaysia Inventory (EHS Register)**: Not determined.
- New Zealand Inventory of Chemicals (NZIoC)**: All components are listed or exempted.
- Philippines inventory (PICCS)**: All components are listed or exempted.
- Taiwan inventory (CSNN)**: Not determined.

Section 16. Other information

History

Date of printing : 3/6/2015.

Date of issue/Date of revision : 3/6/2015.

Date of previous issue : No previous validation.

Version : 1

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

92-14772-6

MSDS of CSL 535 Oil Resistant Silicone Sealant/Adhesive



MATERIAL SAFETY DATA

CSL 535 Oil Resistant Silicone Sealant/Adhesive

Reviewed March 30, 2010

MSDS NO. 230

I PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME	CSL 535 Oil Resistant Silicone Sealant/Adhesive
CHEMICAL NAME	Not Applicable
CHEMICAL FORMULA	Silicone Sealant
MOLECULAR WEIGHT	Polymer
MATERIAL USES	Sealant for use in wide range of industrial applications.
MANUFACTURER	CSL Silicones Inc. 144 Woodlawn Road West Guelph, ON N1H 1B5 Canada
TELEPHONE	1-519-836-9044
FAX	1-519-836-9069
EMERGENCY TELEPHONE	1-519-836-9044

II HAZARDS IDENTIFICATION

A. HAZARDOUS INGREDIENTS OF MATERIAL

Methyl Ethyl Ketoxime (MEKO) is a curing by-product that is released when the sealant comes in contact with water or humid air. It is recommended to provide adequate ventilation to keep concentration below 3 ppm. TWA: 3 ppm, STEL: 10 ppm, Work place Environmental Exposure Level AIMA: 10 ppm.

B. EFFECTS OF CHRONIC EXPOSURE

Health Effects	Pulmonary Edema, Dermatitis.
Toxicological Data	LD50 of mixture (calculated) Ingestion/Rat 3810-4670 mg/kg
Carcinogenicity Data	The ingredients of this product are not listed as carcinogens by National Toxicology Program, and have not been evaluated by the International Agency for Research on Cancer or the American Conference of Government Industrial Hygienists.
Reproductive Data	Octamethylcyclotetrasiloxane (in concentration of 500 to 700 ppm) has shown reproductive effects in laboratory animals. No available information of adverse reproductive effects of other ingredients in this product.
Mutagenicity Data	No information available and no adverse mutagenic effects are anticipated.
Teratogenicity Data	No information available and no adverse teratogenic effects are anticipated.
Synergistic Products	None Known.
Delayed Effects	Curing by-product Methyl Ethyl Ketoxime (MEKO). Male rats and mice exposed to MEKO throughout their lifetime developed liver tumors. Many commonly used chemicals cause liver tumors in rats and mice. The relevance to humans is uncertain.

C. EFFECTS OF ACUTE EXPOSURE

Inhalation	Not normally an inhalation hazard. At high vapor concentration, curing by-product has a narcotic action with reversible effects.
-------------------	--

MSDS of CSL 535 Oil Resistant Silicone Sealant/Adhesive

Eyes	Moderate irritation. Can cause burns.
Skin	Mild irritant; may cause transient reddening of the skin.
Ingestion	Very low oral toxicity. May cause irritation and obstruction to gastro-intestinal tract.

D. HAZARD SYMBOLS



Harmful if swallowed

III COMPOSITION/INFORMATION ON INGREDIENTS

MATERIAL	%	CAS NUMBER	ACGIH TLV	LD50
Amorphous Silica	5-10	7631-86-9	5 mg/m ³	>5000 mg/kg oral/rat
Oximino Silane	1-5	22984-54-9	Not Established	2-3 mL/kg oral/rat
Amino Alkyl Silane	1-5	919-30-2	Not Established	Not Established
Octamethylcyclotetrasiloxane	0.1-2	556-67-2	10 ppm	2000 mg/kg oral/rat 36 mg/L Inhal/ rat 4 hrs

IV FIRST AID MEASURES

Inhalation	No emergency care anticipated. Treat symptomatically. If symptoms persist, consult physician.
Eye Contact	Do not attempt to physically remove solids or gums from eye. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 20 minutes, by the clock, holding the eyelid(s) open. Obtain medical attention immediately.
Skin Contact	Remove contaminated clothing. Wash gently and thoroughly with water and non-abrasive soap. If symptoms persist, obtain medical attention. Contaminated clothing should be laundered before re-use.
Ingestion	Never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. DO NOT INDUCE VOMITING. Have victim drink 8 to 10 oz. (240 to 300ml) of water or milk to dilute material in stomach. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Repeat the administration of water/milk. Obtain medical attention immediately.
First Aid	Provide general supportive measures (comfort, warmth, rest). Consult a physician and/or the nearest Poison Control Center for all exposures except minor instances of inhalation or skin contact. Solid or plastic material in the eye should be removed only by a physician.

V FIRE FIGHTING MEASURES

A. FIRE AND EXPLOSION DATA

Flash Point of Curing	
By-Product and Method	85° C. P.M.C.C. ASTM D-93
Lower Explosive Limit %	Not Applicable
Upper Explosive Limit %	Not Applicable
Autoignition Temperature	No Data
Fire Extinguishing Agents	Dry Chemical, CO ₂ , Water Spray
Unusual Fire/ Explosion Hazard	None
Hazardous Combustion Products	Carbon Dioxide, Carbon Monoxide, Silicon Dioxide, Nitrogen Oxide, Formaldehyde

MSDS of CSL 535 Oil Resistant Silicone Sealant/Adhesive

B. FIRE FIGHTING PROCEDURES

Wear Self Contained Breathing Apparatus (SCBA) which provides eye protection and is NIOSH approved. Sealant will burn if strongly heated. Water can be used to cool material below flash point.

VI ACCIDENTAL RELEASE MEASURES

Spill and Leak Procedure Restrict access to area of spill. Provide ventilation and protective clothing if needed. Scrape-up sealant with cardboard or rag and place in a container.

Waste Disposal Review environmental regulations for disposal. Silicone wastes can often be incinerated in approved facilities. Solid waste may be sent to a designated landfill site.

VII HANDLING AND STORAGE

Storage Conditions Store in cool dry conditions. Keep container tightly sealed when not in use.

Handling Procedure No specific measures required. Do not inhale vapor or ingest sealant. Cured CSL product does not require special precautions.

VIII EXPOSURE CONTROL AND PERSONAL PROTECTION

Methyl ethyl ketoxime (MEKO) is released as a curing by-product when in contact with humid air.

EXPOSURE LIMIT OF CURING BY-PRODUCT

Component	OSHA PEL	ACGIH TLV	Other Limits
MEKO	None	None	10 ppm (STEL) 10 ppm (TWA)

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection Not required unless normal ventilation is inadequate.

Eye/Face Protection Chemical splash goggles

Skin Protection Gloves, coveralls, apron may be useful to prevent contamination of skin or clothing.

Resistance of Materials for Protective Clothing No specific data. Most rubbers and plastics are adequate.

Ventilation Requirements Local exhausts to provide sufficient removal of vapours.

IX PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Thixotropic paste
Odour	Almost odourless
Odour Threshold	Not Applicable
pH	Not determined
Boiling Point (°C)	Not Applicable
Freezing Point (°C)	Not Applicable
Vapor Pressure (mm Hg)	Negligible @ 25°C.
Vapor Density (Air = 1)	Not Applicable
VOC Concentration	47.69 g/L (0.398 lb/gallon)
Specific Gravity (Water = 1)	1.03
Solubility in Water	Insoluble
Solubility in Other Solvents	Soluble in Most Organic Solvents
Evaporation Rate	Not Applicable

MSDS of CSL 535 Oil Resistant Silicone Sealant/Adhesive

Decomposition Temperature Not determined

X STABILITY AND REACTIVITY

Product Stability Stable
Hazardous Polymerization Will not occur
Incompatible Materials **STRONG OXIDIZERS, CONCENTRATED ACIDS OR BASES** cause degradation of polymer. Boiling water may soften and weaken material.
Hazardous Decomposition Products Combustion will produce silicon dioxide, carbon dioxide, carbon monoxide and nitrogen oxides. A component of this product can generate formaldehyde at approximately 150°C (300°F) and above in the atmosphere containing oxygen. Formaldehyde is a skin and respiratory sensitizer, eye and throat irritant, acute toxicant and potential carcinogen.

XI TOXICOLOGICAL INFORMATION

Toxicological Data LD50 of mixture (calculated) Ingestion/Rat 3810-4670 mg/kg

Evidence of reproductive effects of Octamethylcyclotetrasiloxane in laboratory animals at concentrations of 500 and 700 ppm

XII ECOLOGICAL INFORMATION

Sealant will release methyl ethyl ketoxime (MEKO) when in contact with water. MEKO has been determined to be biodegradable and has a static 96 hours LC₅₀ of 48 mg/L (bluegill) and a 48 hours EC₅₀ of 750 mg/L (daphnia).

XIII DISPOSAL CONSIDERATION

Not classified as Hazardous Waste.

Review environmental regulations to disposal. Silicone wastes can often be incinerated in approved facilities. Solid waste may be sent to a designated landfill site.

XIV TRANSPORT INFORMATION

TDG Information Not a regulated item.

XV REGULATORY INFORMATION

Risk Phrases R22 Harmful if swallowed.
R36 Irritating to eyes.
R43 May cause sensitization by skin contact.

Safety Phrases S23 Do not breath vapours
S24/25 Avoid contact with skin and eyes
S51 Use in well-ventilated areas

WHMIS Classification 1. CLASS D-Poisonous and Infectious Material
Division 2- Other Toxic Effects
Subdivision A- Very toxic material
2. CLASS D-Poisonous and Infectious Material
Division 2-Other Toxic Effects
Subdivision B-Toxic material

RoHS Statement CSL 535 Oil Resistant Silicone Sealant/Adhesive does not contain Lead (Pb), Mercury (Hg), Cadmium (Cd), Hexavalent Chromium,

MSDS of CSL 535 Oil Resistant Silicone Sealant/Adhesive

Polybrominated Biphenyls (PBBs) and Polybrominated Diphenyl Ethers (PBDEs) as listed in RoHS Directives.

TSCA Status

All ingredients of this product are listed on TSCA Inventory of Chemicals.

State of California
Safe Drinking Water
And Toxic Enforcement
Act 1986 (Proposition 65)

None of the ingredients of this product is listed on Proposition 65 list issued on December 2006.

Canadian DSL Status

All ingredients of this product are on the Canadian DSL.

XVI OTHER INFORMATION

Date Issued

August 9, 2007

Date Revised

March 30, 2010

Prepared By

Farooq Ahmed, Research and Development Manager

Emergency Contact

Baz Mistry, Laboratory Manager
or Farooq Ahmed, Research and Development Manager

REFERENCES

1. American Conference of Governmental Industrial Hygienists Inc., Documentation of the Threshold Limit Values (TLV) and Biological Exposures Indices, 5th Edition, 1986, Cincinnati, OH.
2. National Institute for Occupational Safety and Health, Registry of Toxic Effects of Chemical Substances.
3. Sigma-Aldrich Corp., USA, The Sigma-Aldrich Library of Chemical Safety Data, 1985.
4. Sittig, M., handbook of Toxic and Hazardous Chemicals and Carcinogens, 2nd Edition, 1985, Park Ridge, N.I.
5. Canadian Center for Occupational Health and Safety, CHEMINFO, Record #15E, #26E.
6. Material Safety Data Sheets from Cabot Corporation, Wacker-Chemie GMBH, General Filtration, Dow Corning, Union Carbide, Hoechst Canada, Honeywell Chemicals.
7. Canada's National Occupational Health & Safety Resources at www.ccohs.ca/oshanswers/legisl/whmis
8. Information from Health Canada Website at www.hc-sc.gc.ca/ohc-asc/interactiv/ohs-sgh/index_e.html
9. Information from United Nations Website at www.unccc.org/trans/danger/publi/ghs/ghs_rev01/01files_e.html
10. Information about RoHS (Restriction of Use of Certain Hazardous Substances in Electrical and Electronic Equipments) was obtained from Website at www.rohs.gov.uk
11. Information about State of California Safe Drinking Water and Toxic Enforcement Act 1986 (Proposition 65) was obtained from Website at www.oehha.ca.gov/prop65.html

The information contained herein has been prepared in good faith to comply with applicable federal and provincial (state) law(s). However, no warranty of any kind is given or implied and CSL Silicones Inc. will not be responsible for any damages, losses or injuries that may result from the use of any information contained here.

CSL SILICONES INC.

144 Woodlawn Road West, Guelph, Ontario Canada N1H 1B5
Telephone: (519) 836-9044 FAX: (519) 836-9069

NONE.



CommCool™ HD

SECTION 1: Product Information and Company Identification

Common Name : CommCool™ HD
Product Code : 7205
Material Use : Semi-Synthetic Metalworking Fluid
Supplier/Manufacturer : Commonwealth Oil, 2080 Ferriss Rd N., Harrow, ON, N0R 1G0
In Case of Emergency : CANUTEC (613) 996-6666 COLLECT 24 Hr

SECTION 2: Composition, Information on Ingredients

Component	CAS Registry No.	OSHA PEL	ACGIH TLV	Concentration %
Fatty Acid Amide Mixture	Mixture	Not Available	Not Available	< 9.0
Petroleum Sulfonate	Mixture	Not Available	Not Available	< 5.0
Corrosion Inhibitor Additive	Mixture	5mg/m ³	5mg/m ³	< 2.5
ETHYLENE OXIDE-NONYLPHENOL POLYMER	9016-45-9	Not Available	Not Available	< 2.5
Triethanolamine	102-71-6	5mg/m ³	5mg/m ³	< 3.0

See Section 8 for Exposure Limits.
 See Section 11 for Toxicological Data.

SECTION 3: Hazards Identification

Chemical Family : Complex Mixture
Physical State : Liquid
Emergency Overview : No specific Hazard
 Use with care.
 Follow good Industrial Hygiene practices.
Routes of Entry : Dermal contact, eye contact, inhalation and ingestion.
Potential Acute Health Effects : No known significant effects or critical hazards.
Potential Chronic Health Effects : Not applicable for carcinogenic, mutagenic, or teratogenic effects.
Medical Conditions Aggravated by Overexposure : Repeated or prolonged exposure is not known to aggravate medical condition.
Overexposure Signs and Symptoms : Not available

See Toxicological Information (section 11)

SECTION 4: First Aid Measures

Eye Contact : Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention if irritation occurs and or persists.
Skin Contact : Remove any contaminated clothing. Wash with soap and water. Get medical attention if irritation occurs and or persists.
Inhalation : If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion : Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious patient. If large amounts of this material are swallowed, call a physician immediately.

Notes to Physician : Not available

SECTION 5: Fire Fighting Measures

Flammability of the Product : Not Applicable (Water-Based Product)
Auto Ignition Temperature : Not Applicable (Water-Based Product)
Flash Point (COC) : Not Applicable (Water-Based Product)
Flammable Limits : No Data
Hazardous Combustion Products : These products are not combustible.
Fire Hazards in Presence of various Substances : Not Applicable. Slightly flammable in the presence of heat and complete water evaporation.
Explosion Hazard in Presence of various substances : Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.
Fire Fighting Media and Instructions : SMALL FIRE: Use dry chemical powder
 LARGE FIRE: Use water spray, fog or foam. Do not use water jet.
Protective Clothing (Fire) : Fire fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear. Be sure to use a MSHA/NIOSH approved respirator or equivalent.
Special Remarks on Fire Hazards : Container explosion may occur under fire conditions or when heated. Cool closed containers exposed to fire with water.

SECTION 6: Accidental Release Measures

Small Spill and Leak : Absorb with an inert material and put spilled material in an appropriate waste disposal.
Large Spill and Leak : Absorb with an inert material and put spilled material in an appropriate waste disposal. Do not allow any potentially contaminated water including rainwater, runoff from fire fighting or spills enter any waterway, sewer or drain.

Note: See section 8 for personal protective equipment and section 13 for waste disposal.

SECTION 7: Handling and Storage

Handling : Use proper grounding procedures as material can accumulate static charges. Avoid breathing vapors or spray mists. Avoid contact with eyes, skin and clothing. After handling, always wash hands thoroughly with soap and water. Do not cut, weld, heat or pressurize containers. Use with adequate ventilation.
Storage : Keep container tightly closed. Store in a dry, cool and well-ventilated area. Do not cut, weld, heat or pressurize empty containers. Do not store near open flames or sources of ignition.

SECTION 8: Exposure Controls, Personal Protection

Engineering Controls : Good general ventilation should be sufficient to control airborne levels. Local exhaust is recommended to control emissions at the source. Mechanical ventilation is recommended for confined areas. Ensure eyewash stations and safety showers are proximal to the work station location.

Personal Protection

Eyes : Safety glasses or goggles are advisable.
Body : Lab coat or suitable protective clothing is advisable.
Respiratory : A respirator is not needed under normal and intended usage conditions.
Hands : Chemical resistant or oil impervious gloves are advisable.
Feet : Shoes (as required by the work place).

Personal Protection in Case of a Large Spill : Splash goggles. Full suit. Vapor respirator. Boots. Chemical resistant gloves. A self contained breathing apparatus should be used to avoid inhalation of the product.

Exposure Limits : 5 mg/m³ ACGIH TLV (United States and Canada)
 Oil Mist – Severely refined TLV-TWA: 5 mg/m³ Form: Mist
 Consult local authorities for your acceptable exposure limits.

SECTION 9: Physical and Chemical Properties

Physical State : Liquid
 Appearance and Color : Clear to slightly turbid blue/green solution.
 Odour : Mild pleasant odour.
 pH : 10 ±10%
 Flash Point (COC) : Not Applicable
 Boiling/Condensation Point : 100°C (212°F)
 Pour Point °C (°F) : Not Established
 Freezing Point : 0°C (32°F)
 Specific Gravity : 1.00 (Water = 1)
 Density, lbs./Gallon : 8.32
 Vapor Pressure : Not Applicable
 Vapor Density : Not Applicable
 % Volatility, By volume : Similar to Water
 Evaporation Rate : Negligible (nBuAc=1)
 VOC : Not Applicable
 Viscosity cSt @ 40°C : Not Established
 Solubility in Water : Soluble

SECTION 10: Stability and Reactivity

Stability and Reactivity : The product is stable.
 Incompatibility with : Reactive with strong oxidizing agents.
 Various Substances
 Hazardous Decomposition : Fumes, smoke, and carbon monoxide and sulphur oxides in case of
 Products incomplete combustion.
 Hazardous Polymerization : Will not occur

SECTION 11: Toxicological Information

Acute Toxicity Data : Avoid breathing mist and fumes. Proper ventilation should be utilized.
 Chronic Effects on Humans:
 Eyes : Slightly irritating, but will not injure eye tissue. May irritate the eyes.
 Skin : Low toxicity. Frequent or prolonged contact may irritate the skin.
 Ingestion : Low toxicity.
 Inhalation : Negligible hazard at normal temperatures. Elevated temperatures or mechanical action may form vapors, mists or fumes, which may be irritating to the eyes, nose, throat and lungs. Avoid breathing vapors or mists.
 Other Toxic Effects on Humans : Low
 Special Remarks on Toxicity : Low
 to Animals
 Special Remarks on Other Toxic : None reported.
 Effects on Humans

SECTION 12: Ecological Information

BOD and COD : Not Established
 Biodegradability/OECD : Not Established
 Mobility : Not Established
 Products of Degradation : Not Established
 Toxicity of the Products of Biodegradation : Not Established

Special Remarks on the Products of Biodegradation : Not Established

SECTION 13: Disposal Considerations

Waste Information : Waste should be disposed of in accordance to local, federal and state environmental control regulations.

Consult your local or regional authorities.

SECTION 14: Transport Information

Regulatory Information	UN Number	Proper Shipping Name	Class	Packing Group	Label	Additional Information
United States (DOT)	Not Regulated	-	-	-	-	-
Canada (TDG)	Not Regulated	-	-	-	-	-
Mexico (NOM-004-SCT2-1994)	Not Regulated	-	-	-	-	-
IMDG Code	Not Regulated	-	-	-	-	-
IATADGR Class	Not Regulated	-	-	-	-	-

NAERG (North American Emergency Response Guide): Not applicable

SECTION 15: Regulatory Information

United States

U.S. Federal Regulations : TSCA 8(b) inventory: All components listed.
 SARA 302/304/311/312 extremely hazardous substances: No products found.
 SARA 302/304 emergency planning and notification: No products found.
 SARA 302/304/311/312 hazardous chemicals: No products found.
 SARA 311/312 MSDS distribution – chemical inventory – hazard identification: No products found.
 Clean Water Act (CWA) 307: No products found.
 Clean Water Act (CWA) 311: No products found.
 Clean Air Act (CAA) 112 accidental release prevention: No products found.
 Clean Air Act (CAA) 112 regulated flammable substances: No products found.
 Clean Air Act (CAA) 112 regulated toxic substances: No products found.

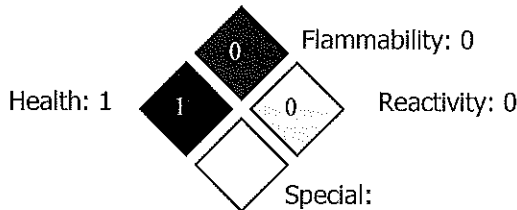
State Regulations : California prop. 65: No products found.

Canada

WHMIS (Canada) : Class D2B WHMIS (Canada)
 CEPA DSL: All components listed.

Mexico

Classification



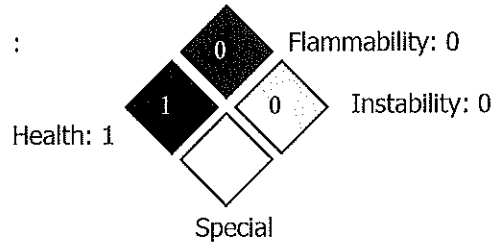
SECTION 16: Other Information

Label Requirements : USE WITH CARE.
USE AS DIRECTED.

Hazardous Material Information System (U.S.A.) :

Health	1
Fire Hazard	0
Reactivity	0
Personal Protection	B

National Fire Protection Association (U.S.A.) :



Date of Issue : March 12, 2014

Date of Previous Issue : July 18, 2011

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Prepared By: Commonwealth Oil Technical Services Department (Tel: 1-519-738-3503)



CommCool™ 8800

SECTION 1: Product Information and Company Identification

Common Name : CommCool™ 8800
Product Code : 7223
Material Use : Semi-Synthetic Metalworking Fluid
Supplier/Manufacturer : Commonwealth Oil, 2080 Ferriss Rd N., Harrow, ON, N0R 1G0
In Case of Emergency : CANUTEC (613) 996-6666 COLLECT 24 Hr

SECTION 2: Composition, Information on Ingredients

Component	CAS Registry No.	OSHA PEL	ACGIH TLV	Concentration %
Monoethanolamine	141-43-5	3 ppm	3 ppm	< 4.0
Triethanolamine	102-71-6	5 mg/m ³	5 mg/m ³	< 2.0
Diethylene Glycol Monobutyl Ether	112-34-5		20 ppm	< 3.0

See Section 8 for Exposure Limits.
 See Section 11 for Toxicological Data.

SECTION 3: Hazards Identification

Chemical Family : Complex Mixture
Physical State : Liquid
Emergency Overview : No specific Hazard
 Use with care.
 Follow good Industrial Hygiene practices.
Routes of Entry : Dermal contact, eye contact, inhalation and ingestion.
Potential Acute Health Effects : No known significant effects or critical hazards.
Potential Chronic Health Effects : Not applicable for carcinogenic, mutagenic, or teratogenic effects.
Medical Conditions Aggravated by Overexposure : Repeated or prolonged exposure is not known to aggravate medical condition.
Overexposure Signs and Symptoms : Not available

See Toxicological Information (section 11)

SECTION 4: First Aid Measures

Eye Contact : Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 20 minutes. Cold water may be used. Get medical attention if irritation occurs and or persists.
Skin Contact : Remove any contaminated clothing. Wash with soap and water. Get medical attention if irritation occurs and or persists.
Inhalation : If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Ingestion : Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious patient. If large amounts of this material are swallowed, call a physician immediately.
Notes to Physician : Not available

SECTION 5: Fire Fighting Measures

- Flammability of the Product** : Product generally will not burn
Auto Ignition Temperature : Not Determined
Flash Point (COC) : Not Determined
Flammable Limits : No Data
Hazardous Combustion Products : Oxides of carbon, nitrogen, boron.
Fire Hazards in Presence of various Substances : Do not mix with strong oxidants. Slightly flammable in the presence of high heat and complete water evaporation.
Explosion Hazard in Presence of various substances: Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.
Fire Fighting Media and Instructions : SMALL FIRE: Use dry chemical powder
 LARGE FIRE: Use water spray, fog or foam. Do not use water jet.
Protective Clothing (Fire) : Fire fighters should wear positive pressure self-contained breathing apparatus (SCBA) and full turnout gear. Be sure to use a MSHA/NIOSH approved respirator or equivalent.
Special Remarks on Fire Hazards : Container explosion may occur under fire conditions or when heated. Cool closed containers exposed to fire with water.

SECTION 6: Accidental Release Measures

- Small Spill and Leak** : Absorb with an inert material and put spilled material in an appropriate waste disposal.
Large Spill and Leak : Absorb with an inert material and put spilled material in an appropriate waste disposal.
 Do not allow any potentially contaminated water including rainwater, runoff from fire fighting or spills enter any waterway, sewer or drain.

Note: See section 8 for personal protective equipment and section 13 for waste disposal.

SECTION 7: Handling and Storage

- Handling** : Use proper grounding procedures as material can accumulate static charges. Avoid breathing vapors or spray mists. Avoid contact with eyes, skin and clothing. After handling, always wash hands thoroughly with soap and water. Do not cut, weld, heat or pressurize containers. Use with adequate ventilation.
Storage : Keep container tightly closed. Store in a dry, cool and well-ventilated area. Do not cut, weld, heat or pressurize empty containers. Do not store near open flames or sources of ignition.

SECTION 8: Exposure Controls, Personal Protection

- Engineering Controls** : Good general ventilation should be sufficient to control airborne levels. Local exhaust is recommended to control emissions at the source. Mechanical ventilation is recommended for confined areas. Ensure eyewash stations and safety showers are proximal to the work station location.

Personal Protection

- Eyes** : Safety glasses or goggles are advisable.
Body : Lab coat or suitable protective clothing is advisable.
Respiratory : A respirator is not needed under normal and intended usage conditions.
Hands : Chemical resistant or oil impervious gloves are advisable.
Feet : Shoes (as required by the work place).

- Personal Protection in Case of a Large Spill** : Splash goggles. Full suit. Vapor respirator. Boots. Chemical resistant gloves. A self contained breathing apparatus should be used to avoid inhalation of the product.

- Exposure Limits** : 5 mg/m³ ACGIH TLV (United States and Canada) Oil mists

- Oil Mist – Severely refined** TLV-TWA: 5 mg/m³ Form: Mist

Consult local authorities for your acceptable exposure limits.

SECTION 9: Physical and Chemical Properties

Physical State	: Liquid
Appearance and Color	: Transparent to slightly turbid blue solution.
Odour	: Mild pleasant odour.
pH	: 9.1 @ 5%
Flash Point (COC)	: Not Applicable
Boiling/Condensation Point	: 100°C (212°F)
Pour Point °C (°F)	: Not Established
Freezing Point	: 0°C (32°F)
Specific Gravity	: 1.05 (Water = 1)
Density, lbs./Gallon	: 8.7
Vapor Pressure	: Not Applicable
Vapor Density	: Not Applicable
% Volatility, by volume	: Similar to Water
Evaporation Rate	: Negligible (nBuAc=1)
VOC	: Not Determined
Viscosity cSt @ 40°C	: Not Determined
Solubility in Water	: Completely Soluble

SECTION 10: Stability and Reactivity

Stability and Reactivity	: The product is stable.
Incompatibility with Various Substances	: Reactive with strong oxidizing agents.
Hazardous Decomposition Products	: Fumes, smoke, and carbon monoxide and oxides of carbon, nitrogen and boron.
Hazardous Polymerization	: Will not occur

SECTION 11: Toxicological Information

Acute Toxicity Data	: Avoid breathing mist and fumes. Proper ventilation should be utilized.
Chronic Effects on Humans:	
Eyes	: Slightly irritating, but will not injure eye tissue. May irritate the eyes.
Skin	: Low toxicity. Frequent or prolonged contact may irritate the skin.
Ingestion	: Low toxicity.
Inhalation	: Negligible hazard at normal temperatures. Elevated temperatures or mechanical action may form vapors, mists or fumes, which may be irritating to the eyes, nose, throat and lungs. Avoid breathing vapors or mists.
Other Toxic Effects on Humans	: Low
Special Remarks on Toxicity to Animals	: Contains alkanolamine. Do not mix with or add nitrites as this could form nitrosamines, some of which are animal carcinogens.
Special Remarks on Other Toxic Effects on Humans	: None reported.

SECTION 12: Ecological Information

BOD and COD	: Not Established
Biodegradability/OECD	: Not Established
Mobility	: Not Established
Products of Degradation	: Not Established
Toxicity of the Products of Biodegradation	: Not Established
Special Remarks on the Products of Biodegradation	: Not Established

SECTION 13: Disposal Considerations

Waste Information : Waste should be disposed of in accordance to local, federal and state environmental control regulations.

Consult your local or regional authorities.

SECTION 14: Transport Information

Regulatory Information	UN Number	Proper Shipping Name	Class	Packing Group	Label	Additional Information
United States (DOT)	Not Regulated	-	-	-	-	-
Canada (TDG)	Not Regulated	-	-	-	-	-
Mexico (NOM-004-SCT2-1994)	Not Regulated	-	-	-	-	-
IMDG Code	Not Regulated	-	-	-	-	-
IATADGR Class	Not Regulated	-	-	-	-	-

NAERG (North American Emergency Response Guide): Not applicable

SECTION 15: Regulatory Information**United States**

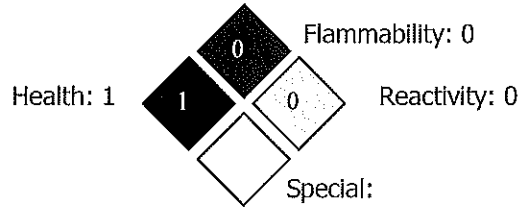
U.S. Federal Regulations : TSCA 8(b) inventory: All components listed.
 SARA 302/304/311/312 extremely hazardous substances: No products found.
 SARA 302/304 emergency planning and notification: No products found.
 SARA 302/304/311/312 hazardous chemicals: No products found.
 SARA 311/312 MSDS distribution – chemical inventory – hazard identification: No products found.
 Clean Water Act (CWA) 307: No products found.
 Clean Water Act (CWA) 311: No products found.
 Clean Air Act (CAA) 112 accidental release prevention: No products found.
 Clean Air Act (CAA) 112 regulated flammable substances: No products found.
 Clean Air Act (CAA) 112 regulated toxic substances: No products found.

State Regulations : California prop. 65: No products found.

Canada

WHMIS (Canada) : Class D2B WHMIS (Canada)
 CEPA DSL: All components listed.
 "This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations* and the MSDS contains all of the information required by the *Controlled Products Regulations*."

Mexico Classification :



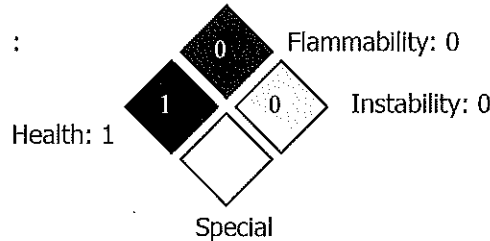
SECTION 16: Other Information

Label Requirements : USE WITH CARE.
USE AS DIRECTED.

Hazardous Material Information System (U.S.A.) :

HEALTH	1
FLAMMABILITY	0
PHYSICAL HAZARD	0
PERSONAL PROTECTION	B

National Fire Protection Association (U.S.A.) :



Date of Issue : July 8, 2013

Date of Previous Issue Notice to reader : New

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Authored By: Commonwealth Oil Technical Services Department (Tel: 1-519-738-3503)



Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. This Standard must be consulted for specific requirements.

U.S. Department of Labor

Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY (As Used on Label and List) UTILITY LIGHTER & REFILL	Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.
---	---

Section I

Manufacturer's Name BernzOmatic	Emergency Telephone Number 800-654-9011
Address (Number, Street, City, State, and ZIP Code) 1 Bernzomatic Drive	Telephone Number for Information 800-424-9300
Medina, NY 14103	Date Prepared June 11, 2011
	Signature of Preparer (optional)

Section II - Hazard Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Liquefied Petroleum Gas N-Butane, volume (CAS No. 106-97-8) Isobutane, volume (CAS No. 75-28-5)	1000 ppm 1000 ppm	1000 ppm 1000 ppm		22% 78%

Section III - Physical/Chemical Characteristics

Boiling Point:	-11.7°F	Specific Gravity (H ₂ O = 1):	0.5676
Vapor Pressure (mm Hg.):	Approx. 40 psig	Percent Volatile by Weight:	100%
Vapor Density (AIR = 1):	Greater than 2	Evaporation Rate (Butyl Acetate = 1):	Gas
Solubility in Water:	Less than 0.1% by weight @70°F.		
Appearance and Odor:	Liquefied compressed gas, flash evaporates at room temperature when released from can, colorless gas with essentially no odor.		

Section IV - Fire and Explosion Hazard Data



Flash Point (Method Used): Less than -117°F	Flammable Limits: Extremely Flammable (Reference - Consumer Product Commission, flame projection test for aerosol products, per 16 CFR500.45)	LEL 1.8	UEL 8.4
Extinguishing Media:			
If feasible, stop flow of gas. Use water to cool fire-exposed cans, surroundings and to protect personnel working on shut off. Water spray, dry powder or carbon dioxide can be directed at flame area, if gas flow cannot be stopped, to reduce fire intensity. DO NOT COMPLETELY EXTINGUISH FLAME UNLESS GAS FLOW IS SHUT OFF!			
Special Fire Fighting Procedures:			
Avoid possible accumulations of vapors at floor level, as vapor is heavier than air. Self-contained breathing apparatus and protective clothing should be worn in fighting fires involving chemicals. This product is extremely flammable at all times. Keep away from any sources of inadvertent ignition, including heat, fire, sparks, or flame.			
Unusual Fire and Explosion Hazards:			
This product presents an extreme fire hazard. Liquid very quickly evaporates, even at low temperatures, and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. This may include self-contained breathing Apparatus against the hazardous effects of normal products of combustion of oxygen deficiency. Petroleum gases are heavier than air and travel along the ground or into drains to possible distant ignition sources, causing an explosive flashback.			

Section V - Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable	Stable when stored as a liquid in cans under its own pressure.	Contact with sparks, open flame or any source of ignition.
Incompatibility (Materials to Avoid):			
Hazardous Decomposition or Byproducts: May produce carbon monoxide when oxidized with deficiency of oxygen.			
Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	N/A

Section VI - Health Hazard Data



Route(s) of Entry: Inhalation, skin contact, eye contact	Inhalation? YES	Skin? YES	Ingestion? NO	
Health Hazards (<i>Acute and Chronic</i>):				
Carcinogenicity:	NTP? Not listed as a carcinogen	IARC Monographs? Not listed as a carcinogen	ACGIH? Not listed as a carcinogen	OSHA Regulated? Not listed as a carcinogen
Signs and Symptoms of Exposure:				
<p>Inhalation: This product is an asphyxiate and may exhibit anesthetic properties at very high concentrations. Initial symptoms of exposure at these concentrations are disorientation, lack of coordination, rapid respiration, headache, and nausea. Continued exposure May result in unconsciousness, coma, and possible death.</p> <p>Skin Contact: Vapors are not irritating. Freeze burns or frostbite possible if skin is in prolonged contact with vaporizing liquid.</p> <p>Eye Contact: Same as skin contact.</p>				
Medical Conditions Generally Aggravated by Exposure:				
Respiratory related chronic illnesses (i.e. asthma etc.)				
Emergency and First Aid Procedures:				
<p>Inhalation: Remove to fresh air. Artificial respiration, consult physician.</p> <p>Skin Contact: Wash with soap and water. Remove soaked clothing to avoid prolonged skin contact.</p> <p>Eye Contact: Flush eyes well with running water for 15 minutes.</p> <p>Ingestion: N/A, product is gaseous at normal temperature and pressure.</p>				
Warning:				
This fuel and by-products of combustion of this fuel, contain chemicals known to the State of California to cause cancer, birth defects, and other reproductive harm.				

Section VII - Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled:	Protect from any ignition source, keep away from heat, fire, sparks, or flame. Ventilate area well. Avoid accumulation of vapor at low levels.
Waste Disposal Method:	Dispose of in accordance with all local, state and federal regulations. Do not puncture or incinerate.
Precautions to Be taken in Handling and Storing:	Do not store where temperature may exceed 120°F. Store away from, fire, sparks, or flame. Store in suitable area for hazardous materials storage.
Other Precautions:	

Section VIII - Control Measures



Respiratory Protection (<i>Specify Type</i>): If TLV is exceeded wear NIOSH-approved self-contained breathing device or respirator.	
Ventilation: Must be adequate to maintaining airborne concentrations below established exposure limits, particularly at floor level as vapors are heavier than air.	
Local Exhaust- Mechanical (General)- Special- Other-	
Protective Gloves: None needed for normal use. Thermal insulated gloves when handling if prolonged exposure expected.	Eye Protection : Safety glasses or goggles recommended
Other Protective Clothing or Equipment:	
Work/Hygienic Practices:	

Section IX - Special Precautions

Precautions to be taken in Handling and Storing: Do not use near heat, fire, flame or sparks. Avoid excessive breathing of vapor. Do not spray in direction of body. Use only in accordance with directions.
Other Precautions :

Section X – Transportation Information

D.O.T Shipping Classification	Butane, 2.1
Technical Name:	
Hazard Class:	2.1
IMO Hazard Class and No.:	Non-hazardous
Un No.:	1057
Packing Group:	
Emergency Response Guide Number:	
Type D.O.T. Label Required Information:	Flammable Gas
Other:	TSCA Statement: All the components of this product are in compliance with the Toxic Substances Control Act (TSCA) and are either listed on the TSCA Inventory or otherwise exempted from listing.



Section XI – Additional Information

DISCLAIMER: Judgments as to the suitability of information herein or the purchaser's purposes are necessarily the purchaser's responsibility. Reasonable care has been taken in the preparation of this material, but there are NO WARRANTIES, NO REPRESENTATIONS, AND NO RESPONSIBILITY AS TO THE ACCURACY OR THE SUITABILITY OF THIS INFORMATION FOR ANY PURCHASER'S USE OR FOR ANY CONSEQUENCE TO USE.

This Material Safety Data Sheet is offered solely for your information, consideration and investigation. Bernzomatic provides no warranties; either express or implied, and assumes no responsibilities for the accuracy or completeness of the data contained in this document. The data in this Material Safety Data Sheet relates only to this product and does not relate to use in combination with any other material or in any process.

NONE.

Material Safety Data Sheet



ARCAL 21/BLUESHIELD™ 6/ BLUESHIELD 7/
BLUESHIELD 8/BLUESHIELD 21/ ALFLUX™

1. Product and company identification

Product name : ARCAL 21/BLUESHIELD™ 6/ BLUESHIELD 7/ BLUESHIELD 8/BLUESHIELD 21/
ALFLUX™

Material uses : Shielding gas for arc welding.

Supplier/Manufacturer : Air Liquide Canada Inc.
1250, René-Lévesque West, Suite 1700
Montreal, QC
H3B 5E6
www.airliquide.ca
1-800-817-7697

Prepared by : IHS

In case of emergency : (514) 878-1667

2. Hazards identification

Physical state : Gas.

Color : Colorless.

Odor : Odorless.

Emergency overview

Signal word : CAUTION!

Hazard statements : HIGH PRESSURE GAS. GAS REDUCES OXYGEN AVAILABLE FOR BREATHING.
CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON
ANIMAL DATA.

Precautions : Contains gas under pressure. In a fire or if heated, a pressure increase will occur and
the container may burst or explode. At very high concentrations, can displace the
normal air and cause suffocation from lack of oxygen. Do not puncture or incinerate
container. Do not enter storage areas and confined spaces unless adequately
ventilated. Avoid breathing gas. Use only with adequate ventilation. Keep container
tightly closed and sealed until ready for use.

Routes of entry : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

Inhalation : At very high concentrations, can displace the normal air and cause suffocation from lack
of oxygen.

Ingestion : As this product is a gas, refer to the inhalation section.

Skin : Contact with rapidly expanding gas may cause burns or frostbite.

Eyes : Contact with rapidly expanding gas may cause burns or frostbite.

Potential chronic health effects

Chronic effects : Contains material that may cause target organ damage, based on animal data.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

2. Hazards identification

- Fertility effects** : No known significant effects or critical hazards.
- Target organs** : Contains material which may cause damage to the following organs: lungs, cardiovascular system, upper respiratory tract, central nervous system (CNS).

Over-exposure signs/symptoms

- Inhalation** : No specific data.
- Ingestion** : No specific data.
- Skin** : No specific data.
- Eyes** : No specific data.
- Medical conditions aggravated by over-exposure** : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

3. Composition/information on ingredients

Name	CAS number	%
argon	7440-37-1	65-96
Carbon dioxide	124-38-9	4-35

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4. First aid measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : As this product is a gas, refer to the inhalation section.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Antidote information

Product/ingredient name	Antidote information
No antidote information known	

- Notes to physician** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5. Fire-fighting measures

- Flammability of the product** : Contains gas under pressure. In a fire or if heated, a pressure increase will occur and the container may burst or explode.
- Extinguishing media**
- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8). If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. Never fix a leak while the system is under pressure. If leak is on container or container valve, contact the closest Air Liquide Canada location.
- Environmental precautions** : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Methods for cleaning up**
- Small spill** : Immediately contact emergency personnel. Stop leak if without risk.
- Large spill** : Immediately contact emergency personnel. Stop leak if without risk. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Contains gas under pressure. Avoid contact with eyes, skin and clothing. Avoid breathing gas. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Valve protection caps must remain in place unless cylinder is secured with valve outlet piped to usage point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure regulator when connecting cylinder to lower pressure piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow to the cylinder. Do not tamper with (valve) safety device. Close valve after each use and when empty.

7. Handling and storage

Storage : Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of non combustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 52°C/125°F. Cylinders must be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in - first out" inventory system to prevent full cylinders being stored for excessive periods of time. Store in accordance with local regulations. Store in a segregated and approved area. Store in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Protect from sunlight. Keep container tightly closed and sealed until ready for use.

8. Exposure controls/personal protection

<u>Occupational exposure limits</u>		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredient	List name	ppm	mg/m ³	Other	ppm	mg/m ³	Other	ppm	mg/m ³	Other	Notations
Carbon dioxide	US ACGIH 6/2013	5000	9000	-	30000	54000	-	-	-	-	[2]
	AB 4/2009	5000	9000	-	30000	54000	-	-	-	-	
	BC 7/2013	5000	-	-	15000	-	-	-	-	-	
	ON 1/2013	5000	9000	-	30000	54000	-	-	-	-	
	QC 12/2012	5000	9000	-	30000	54000	-	-	-	-	

[2]Oxygen Depletion [Asphyxiant]

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Engineering measures : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. If operating conditions cause high gas concentrations to be produced or any recommended or statutory exposure limit is exceeded, use an air-fed respirator or self-contained breathing apparatus. The gas can cause asphyxiation without warning by replacing the oxygen in the air. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

8. Exposure controls/personal protection

Eyes	: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.
Skin	: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Environmental exposure controls	: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. Physical and chemical properties

Physical state	: Gas.
Flash point	: Not available.
Auto-ignition temperature	: Not available.
Flammable limits	: Not available.
Color	: Colorless.
Odor	: Odorless.
pH	: Not available.
Boiling/condensation point	: Not available.
Melting/freezing point	: Not available.
Density	: 1.7893 to 1.8457 g/l
Vapor pressure	: Not available.
Vapor density	: Not available.
Odor threshold	: Not available.
Evaporation rate	: Not available.
Viscosity	: Not available.
Solubility	: Partially soluble in the following materials: cold water.
LogK_{ow}	: Not available.

10. Stability and reactivity

Chemical stability	: The product is stable.
Conditions to avoid	: No specific data.
Incompatible materials	: No specific data.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur. Under normal conditions of storage and use, hazardous polymerization will not occur.

11. Toxicological information

Acute toxicity

Not available.

Chronic toxicity

Not available.

Irritation/Corrosion

Not available.

Sensitizer

Not available.

Carcinogenicity

Classification

Not available.

Mutagenicity

Not available.

Teratogenicity

Not available.

Reproductive toxicity

Not available.

12. Ecological information

Ecotoxicity : No known significant effects or critical hazards.

Aquatic ecotoxicity

Not available.

Persistence/degradability

Not available.

Partition coefficient: n-octanol/water : Not available.

Bioconcentration factor : Not available.

Mobility : Not available.

Toxicity of the products of biodegradation : Not available.

Other adverse effects : No known significant effects or critical hazards.

13. Disposal considerations




Waste disposal : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Empty pressure vessels should be returned to the supplier. Waste packaging should be recycled.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

13. Disposal considerations

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
TDG Classification	UN1956	COMPRESSED GAS, N.O.S. (argon, Carbon dioxide)	2.2	-		<u>Explosive Limit and Limited Quantity Index</u> 0.12 <u>Passenger Carrying Road or Rail Index</u> 75
IMDG Class	UN1956	COMPRESSED GAS, N.O.S. (argon, Carbon dioxide)	2.2	-		<u>Emergency schedules (EmS)</u> F-C, S-V
IATA-DGR Class	UN1956	Compressed gas, n.o.s. (argon, Carbon dioxide)	2.2	-		<u>Passenger and Cargo Aircraft</u> Quantity limitation: 75 kg Packaging instructions: 200 <u>Cargo Aircraft Only</u> Quantity limitation: 150 kg Packaging instructions: 200 <u>Limited Quantities - Passenger Aircraft</u> Quantity limitation: Forbidden Packaging instructions: Forbidden

PG* : Packing group

15. Regulatory information

United States inventory (TSCA 8b) : All components are listed or exempted.

WHMIS (Canada) : Class A: Compressed gas.

Canadian lists

Canadian NPRI : None of the components are listed.

CEPA Toxic substances : The following components are listed: Carbon dioxide

Canada inventory : All components are listed or exempted.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

International regulations

International lists :

- Australia inventory (AICS)**: All components are listed or exempted.
- China inventory (IECSC)**: All components are listed or exempted.
- Japan inventory**: Not determined.
- Korea inventory**: All components are listed or exempted.
- Malaysia Inventory (EHS Register)**: Not determined.
- New Zealand Inventory of Chemicals (NZIoC)**: All components are listed or exempted.
- Philippines inventory (PICCS)**: All components are listed or exempted.
- Taiwan inventory (CSNN)**: All components are listed or exempted.

15. Regulatory information

Chemical Weapons : Not listed
 Convention List Schedule
 I Chemicals

Chemical Weapons : Not listed
 Convention List Schedule
 II Chemicals

Chemical Weapons : Not listed
 Convention List Schedule
 III Chemicals

16. Other information

Label requirements : HIGH PRESSURE GAS. GAS REDUCES OXYGEN AVAILABLE FOR BREATHING. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

Hazardous Material :
 Information System (U.S.A.)

Health	*	0
Flammability		0
Physical hazards		2
Personal protective equipment		G

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

Date of issue : 6/1/2014.
 Date of previous issue : 6/15/2011.
 Version : 6

Indicates information that has changed from previously issued version.

Notice to reader

THE INFORMATION, RECOMMENDATIONS AND DATA CONTAINED IN THIS DOCUMENT ARE INTENDED TO BE USED BY PROPERLY TRAINED AND QUALIFIED PERSONNEL ONLY AND AT THEIR SOLE RISKS AND DISCRETION. THE INFORMATION, RECOMMENDATIONS AND DATA HEREIN CONTAINED ARE DERIVED FROM SOURCES WHICH WE BELIEVE TO BE RELIABLE. HOWEVER, AIR LIQUIDE CANADA INC. MAKES NO REPRESENTATION AND GIVES NO WARRANTY OF ANY KIND WHATSOEVER WITH RESPECT TO THEIR ACCURACY OR COMPLETENESS AND ASSUMES NO LIABILITY FOR DAMAGES OR LOSS ARISING DIRECTLY OR INDIRECTLY FROM THEIR USE, WHETHER PROPER OR IMPROPER.

Notes

ALFLUX™ : Trademark of L'Air Liquide Canada Inc.
 ARCAL™ : Trademark of L'Air Liquide S.A.
 BLUESHIELD™ : Trademark of L'Air Liquide Canada Inc.

98-13813-6/98-19152-6

Material Safety Data Sheet

SYNDURO^{TM/MC} SHB 460



000003001217

Version 2.0

Revision Date 2015/03/10

Print Date 2015/12/15

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : SYNDURO^{TM/MC} SHB 460

Product code : SYND460DRM, SYND460, SYND460DCT

Manufacturer or supplier's details
Petro-Canada Lubricants Inc.
2310 Lakeshore Road West
Mississauga ON L5J 1K2
Canada

Emergency telephone number : Suncor Energy: +1 403-296-3000;
Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : Multifunctional Synthetic (PAO) lubricant for use in air and inert gas compressors and gearboxes. These oils should NEVER be used in equipment compressing pure oxygen or other chemically active gases such as chlorine or hydrogen chloride. DO NOT USE in breathing air apparatus or medical equipment.

Prepared by : Product Safety: +1 905-804-4752

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	viscous liquid
Colour	Pale yellow.
Odour	Hydrocarbon.

Potential Health Effects

Primary Routes of Entry : Eye contact
Ingestion
Inhalation
Skin contact

Aggravated Medical Condition : None known.

Carcinogenicity:

IARC

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Material Safety Data Sheet

SYNDURO ^{TM/MC} **SHB 460**

00003001217

Version 2.0

Revision Date 2015/03/10

Print Date 2015/12/15



ACGIH

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

No hazardous ingredients

SECTION 4. FIRST AID MEASURES

- If inhaled : Move to fresh air.
Artificial respiration and/or oxygen may be necessary.
Seek medical advice.
- In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash skin thoroughly with soap and water or use recognized skin cleanser.
Wash clothing before reuse.
Seek medical advice.
- In case of eye contact : Remove contact lenses.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Obtain medical attention.
- If swallowed : Rinse mouth with water.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Never give anything by mouth to an unconscious person.
Seek medical advice.
- Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : No information available.

Material Safety Data Sheet

SYNDURO ^{TM/MC} **SHB 460**

000003001217



Version 2.0

Revision Date 2015/03/10

Print Date 2015/12/15

- Specific hazards during firefighting : Cool closed containers exposed to fire with water spray.
- Hazardous combustion products : Carbon oxides (CO, CO₂), nitrogen oxides (NO_x), phosphorus oxides (PO_x), smoke and irritating vapours as products of incomplete combustion.
- Further information : Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Material can create slippery conditions.
- Environmental precautions : If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods and materials for containment and cleaning up : Prevent further leakage or spillage if safe to do so.
Remove all sources of ignition.
Soak up with inert absorbent material.
Non-sparking tools should be used.
Ensure adequate ventilation.
Contact the proper local authorities.

SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid contact with skin, eyes and clothing.
Do not ingest.
Keep away from heat and sources of ignition.
Keep container closed when not in use.
- Conditions for safe storage : Store in original container.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep in a dry, cool and well-ventilated place.
Keep in properly labelled containers.
To maintain product quality, do not store in heat or direct sunlight.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Material Safety Data Sheet

SYNDURO ^{TM/MC} **SHB 460**

000003001217

Version 2.0

Revision Date 2015/03/10

Print Date 2015/12/15



Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type : organic vapour filter

Hand protection
Material : neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R).

Remarks : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eye protection : Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Protective measures : Wash hands and face before breaks and immediately after handling the product.
Wash contaminated clothing before re-use.
Ensure that eyewash station and safety shower are proximal to the work-station location.

Hygiene measures : Remove and wash contaminated clothing and gloves, including the inside, before re-use.
Wash face, hands and any exposed skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : viscous liquid

Colour : Pale yellow.

Odour : Hydrocarbon.

Odour Threshold : No data available

pH : No data available

Pour point : -39 °C (-38 °F)

Material Safety Data Sheet

SYNDURO ^{TM/MC} **SHB 460**

000003001217



Version 2.0

Revision Date 2015/03/10

Print Date 2015/12/15

Boiling point/boiling range	: No data available
Flash point	: 266 °C (511 °F) Method: Cleveland open cup
Fire Point	: 296 °C (565 °F)
Auto-Ignition Temperature	: No data available
Evaporation rate	: No data available
Flammability	: Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available
Density	: 0.857 kg/l (15 °C / 59 °F)
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: 452 cSt (40 °C / 104 °F) 46.9 cSt (100 °C / 212 °F)
Explosive properties	: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	: No data available
Incompatible materials	: Reactive with oxidising agents, acids, alkalis and reducing agents.
Hazardous decomposition products	: May release COx, NOx, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Material Safety Data Sheet

SYNDURO ^{TM/MC} **SHB 460**



000003001217

Version 2.0

Revision Date 2015/03/10

Print Date 2015/12/15

Information on likely routes of exposure : Eye contact
Ingestion
Inhalation
Skin contact

Acute toxicity

Product:

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

Skin corrosion/irritation

Product:

Remarks: No data available

Serious eye damage/eye irritation

Product:

Remarks: No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Aspiration toxicity

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish : Remarks: No data available

Material Safety Data Sheet

SYNDURO ^{TM/MC} **SHB 460**

000003001217



Version 2.0

Revision Date 2015/03/10

Print Date 2015/12/15

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Offer surplus and non-recyclable solutions to a licensed disposal company.
Waste must be classified and labelled prior to recycling or disposal.
Send to a licensed waste management company.
Dispose of as hazardous waste in compliance with local and national regulations.
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulation

IATA-DGR

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

49 CFR

Not regulated as a dangerous good

TDG

Material Safety Data Sheet

SYNDURO ^{TM/MC} **SHB 460**

000003001217

Version 2.0

Revision Date 2015/03/10

Print Date 2015/12/15



Not regulated as a dangerous good

Special precautions for user

Not applicable

SECTION 15. REGULATORY INFORMATION

WHMIS Classification : Not Rated

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

The components of this product are reported in the following inventories:

DSL	On the inventory, or in compliance with the inventory
TSCA	All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.
EINECS	On the inventory, or in compliance with the inventory
IECSC	On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

NONE.

Product Name: Argon

MSDS No.: E-4563-L

Date: Oct 15, 2013

Praxair Material Safety Data Sheet

1. Chemical Product and Company Identification

Product Name: Argon	Trade Name: Argon
Product Use: Metal industry: Welding and cutting of metals.	
Chemical Name: Argon	Synonym: Shielding Gas, Argon 40
Chemical Formula: Ar	Chemical Family: (Rare Gas) Noble Gas
Telephone: Emergencies: * 1-800-363-0042	Supplier /Manufacture: Praxair Canada Inc. 1 City Centre Drive Suite 1200 Mississauga, ON L5B 1M2
	Phone: 905-803-1600 Fax: 905-803-1682

**Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier or Praxair sales representative.*

2. Hazards Identification

Emergency Overview

CAUTION! High-pressure gas. Can cause rapid suffocation. May cause dizziness and drowsiness. Self-contained breathing apparatus may be required by rescue workers.

ROUTES OF EXPOSURE: Inhalation.

EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:

INHALATION: Asphyxiant. Effects are due to lack of oxygen. Moderate concentrations may cause headaches, drowsiness, dizziness, excitation, excess salivation, vomiting, and unconsciousness. Lack of oxygen can kill.

SKIN CONTACT: No harm expected.

SKIN ABSORPTION: No harm expected.

SWALLOWING: This product is a gas at normal temperature and pressure.

EYE CONTACT: No harm expected.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE:

A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions. WORKING WITH WELDING AND CUTTING MAY CREATE ADDITIONAL HEALTH HAZARDS.

FUMES AND GASES can be dangerous to your health and may cause serious lung disease.*

Keep your head out of the fumes. Do not breathe fumes and gases caused by the process. Use enough ventilation, local exhaust, or both to keep fumes and gases from your breathing zone and the general area. The type and amount of fumes and gases depend on the equipment and supplies used. Possibly dangerous materials may be found in fluxes, coatings, gases, metals etc. Get a Material Safety Data Sheet (MSDS) for every material used. Air samples can be used to find out what respiratory protection is needed. Short term overexposure to fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat, or eyes.

***NOTES TO PHYSICIAN:**

Acute: Gases, fumes, and dusts may cause irritation to the eyes, lungs, nose, and throat. Some toxic gases associated with welding and related processes may cause pulmonary edema, asphyxiation, and death. Acute overexposure may include signs and symptoms such as watery eyes, nose and throat irritation, headache, difficulty breathing frequent coughing, or chest pains.

Chronic: Protracted inhalation of air contaminants may lead to their accumulation in the lungs, a condition which may be seen as dense areas on chest x-rays. The severity of change is proportional to the length of exposure. The changes seen are not necessarily associated with symptoms or signs of reduced lung function or disease. In addition, the changes on x-rays may be caused by non-work related factors such as smoking, etc.

OTHER EFFECTS OF OVEREXPOSURE:

None known.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

Repeated or prolonged exposure is not known to aggravate any medical condition.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:

None currently known.

CARCINOGENICITY:

Not listed as carcinogen by OSHA, NTP or IARC.

3. Composition and Information on Ingredients

COMPONENTS	CAS NUMBER	CONCENTRATION % by Mole
Argon	7440-37-1	100

4. First Aid Measures

INHALATION:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

SKIN CONTACT:

Flush with water.

SWALLOWING:

This product is a gas at normal temperature and pressure.

EYE CONTACT:

Flush with water.

NOTES TO PHYSICIAN:

This product is inert. There is no specific antidote. Treatment of over-exposure should be directed at the control of symptoms and the clinical condition.

5. Fire Fighting Measures

FLAMMABLE : No. **IF YES, UNDER WHAT CONDITIONS?** Not applicable.

EXTINGUISHING MEDIA:

This material cannot catch fire. Use media appropriate for surrounding fire.

PRODUCTS OF COMBUSTION:

None.

PROTECTION OF FIREFIGHTERS:

CAUTION! High-pressure gas. Asphyxiant. Effects are due to lack of oxygen. Evacuate all personnel from danger area. Immediately deluge cylinders with water from maximum distance until cool; then move them away from fire area if without risk. Shutoff leak if without risk. Arcs and sparks can ignite combustion. Self-contained breathing apparatus may be required by rescue workers. Refer to American National Standard Z49.1 "Safety in Welding and Cutting" for fire prevention information during the use of welding and allied procedures.

SPECIFIC PHYSICAL AND CHEMICAL HAZARDS:

Heat of fire can build pressure in cylinder and cause it to rupture. No part of cylinder should be subjected to a temperature higher than 52 C. Cylinders containing this mixture are equipped with a pressure relief device. (Exceptions may exist where authorized by TDG Regulations.)

SENSITIVITY TO IMPACT:

Avoid impact against container.

SENSITIVITY TO STATIC DISCHARGE:

Not applicable.

PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS:

Firefighters should wear self-contained breathing apparatus and full fire-fighting turnout gear.

FLAMMABLE LIMITS IN AIR, % by volume:

LOWER: Not applicable.

UPPER: Not applicable.

FLASH POINT: Not applicable.

AUTOIGNITION TEMPERATURE: Not applicable.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Personal Precautions:

CAUTION! High-pressure gas. Evacuate all personnel from danger area. Use self-contained breathing apparatus where needed. Shut off flow if you can do so without risk. Ventilate area or move cylinder to a well-ventilated area. Test for sufficient oxygen, especially in confined spaces, before allowing reentry.

Environmental Precautions:

Slowly release into atmosphere. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, provincial, and local regulations. If necessary, call your local supplier for assistance.

7. Handling and Storage

PRECAUTIONS TO BE TAKEN IN HANDLING:

Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Open valve slowly. If valve is hard to open, discontinue use and contact your supplier. For other precautions, see section 16.

For additional information on storage and handling, refer to Compressed Gas Association (CGA) pamphlet P-1, *Safe Handling of Compressed Gases in Containers*, available from the CGA. Refer to section 16 for the address and phone number along with a list of other available publications.

PRECAUTIONS TO BE TAKEN IN STORAGE:

Store and use with adequate ventilation. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Store only where temperature will not exceed 52 C. Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.

OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE:

High pressure gas. Use piping and equipment adequately designed to withstand pressures to be encountered. **Gas can cause rapid suffocation due to oxygen deficiency.** Store and use with adequate ventilation. Close valve after each use; keep closed even when empty. **Prevent reverse flow.** Reverse flow into cylinder may cause rupture. Use a check valve or other protective device in any line or piping from the cylinder. **Never work on a pressurized system.** If there is a leak, close the cylinder valve. Blow the system down in an environmentally safe manner in compliance with all federal, provincial, and local laws, then repair the leak. **Never place a compressed gas cylinder where it may become part of an electrical circuit.**

Fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being worked and the process, procedure, equipment, and supplies used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being worked (such as paint, plating, or galvanizing), the number of workers and the volume of the work area, the quality and amount of ventilation, the position of the worker's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapours from cleaning and degreasing activities). One recommended way to determine the composition and quantity of fumes and gases to which the workers are exposed is to take an air sample from inside the worker's helmet if worn or in the worker's breathing zone. See ANSI/AWSF1.1, available from the American Welding Society, 550 N.W. Le Jeune Rd. Miami, FL 33126. Read and understand the manufacturer's instructions and the precautionary label on the product. See American national Standard Z49.1, "Safety in Welding and Cutting" published by the American Society.

RECOMMENDED PUBLICATIONS:

Additional information on storage, handling, and use of this product is provided in **NFPA 55: Standard for the Storage, Use, and Handling of Compressed and Liquefied Gases in Portable Cylinders**, published by the National Fire Protection Association.

See also Praxair publication P-14-153, *Guidelines for Handling Gas Cylinders and Containers*. Obtain from your local supplier.

8. Exposure Controls/Personal Protection

INGREDIENTS	CAS NUMBER	LD ₅₀ (Species & Routes)	LC ₅₀ (Rat, 4 hrs.)	Exposure Limits
Argon	7440-37-1	Not applicable.	Not available.	Simple asphyxiant.

VENTILATION/ENGINEERING CONTROLS:

LOCAL EXHAUST: Use a local exhaust system, if necessary, to maintain an adequate supply of oxygen in the worker's breathing zone. Adequate ventilation must keep worker exposure below applicable exposure limits for fumes, gases, and other by-products of welding with argon.

MECHANICAL (General): General exhaust ventilation may be acceptable if it can maintain an adequate supply of air.

SPECIAL: None.

OTHER: None.

PERSONAL PROTECTION:

RESPIRATORY PROTECTION: Use fume respirator or air supplied respirator when working in confined space or where local exhaust or ventilation does not keep exposure below TLV. Select in accordance with provincial regulations, local bylaws or guidelines. Selection should also be based on the current CSA standard Z94.4, "Selection, Care and Use of Respirators". Respirators should also be approved by NIOSH and MSHA.

SKIN PROTECTION: Wear work gloves when handling cylinders.

EYE PROTECTION: Wear goggles with filter lens. Provide protective screens and goggles, if necessary to protect others.

Select in accordance with the current CSA standard Z94.3, "Industrial Eye and Face Protection", and any provincial regulations, local bylaws or guidelines.

OTHER PROTECTIVE EQUIPMENT: Metatarsal shoes for cylinder handling. Protective clothing where needed. Cuffless trousers should be worn outside the shoes. Select in accordance with the current CSA standard Z195, "Protective Foot Wear" and any provincial regulations, local bylaws or guidelines.

9. Physical and Chemical Properties

PHYSICAL STATE: Gas. (Compressed Gas)	FREEZING POINT: -189.2°C (-308.6°F)	pH:	Not available.
BOILING POINT: -185.9°C (-302.6°F)	VAPOUR PRESSURE: Not applicable.	MOLECULAR WEIGHT:	39.95 g/mole
SPECIFIC GRAVITY: Not applicable. LIQUID (Water = 1)	SOLUBILITY IN WATER: Partially soluble in cold water.		
SPECIFIC GRAVITY: 1.38 g/ml @ 21.1C	EVAPORATION RATE: Not available. (Butyl Acetate=1):	COEFFICIENT OF WATER/OIL DISTRIBUTION:	Not applicable.
VAPOUR DENSITY: 0.0016 g/ml @ 21.1C	% VOLATILES BY VOLUME: 100% (v/v).	ODOUR THRESHOLD:	Odourless.

APPEARANCE & ODOUR: Colourless. Odourless.

10. Stability and Reactivity

STABILITY:	The product is stable.
CONDITIONS OF CHEMICAL INSTABILITY:	None.
INCOMPATIBILITY (materials to avoid):	None currently known. Product is inert.
HAZARDOUS DECOMPOSITION PRODUCTS:	None.
HAZARDOUS POLYMERIZATION:	Will not occur.
CONDITIONS TO AVOID:	None.
CONDITIONS OF REACTIVITY:	None.

11. Toxicological Information

ACUTE DOSE EFFECTS: Argon is a simple asphyxiant. The welding process may generate hazardous fumes and gases. (See sections 10 and 16.)

STUDY RESULTS:

NO KNOWN EFFECT.

12. Ecological Information

No adverse ecological effects expected. This product does not contain any Class I or Class II ozone-depleting chemicals. The components of this mixture are not listed as marine pollutants by TDG Regulations.

13. Disposal Considerations

WASTE DISPOSAL METHOD: Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier.

14. Transport Information

TDG/IMO SHIPPING NAME: Argon, Compressed

HAZARD CLASS:	CLASS 2.2: Non-flammable, and Non-toxic gas.	IDENTIFICATION #:	UN1006	PRODUCT REPORTABLE QUANTITY (PRQ): Any accidental release in a quantity that could pose a danger to public safety or any sustained release of 10 minutes or more.
----------------------	---	--------------------------	--------	---

SHIPPING LABEL(s): Non-flammable, non-toxic gas

PLACARD (When Required): Non-flammable, non-toxic gas

SPECIAL SHIPPING INFORMATION:

Cylinders should be transported in a secure position, in a well-ventilated vehicle. Cylinders transported in an enclosed, non-ventilated compartment of a vehicle can present serious safety hazards.

15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, provincial, and local regulations. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS (Canada): CLASS A: Compressed gas.

This product is on the DSL list.

International Regulations:

EINECS: Not available.

DSCL (EEC): This product is not classified according to the EU regulations.

International Lists: No products were found.

16. Other Information

MIXTURES:

When two or more gases, or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist, or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

HAZARD RATING SYSTEM:

HMIS RATINGS:

HEALTH 0

FLAMMABILITY 0

PHYSICAL HAZARD 2

STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:

THREADED: CGA-295

PIN-INDEXED YOKE: Not available.

ULTRA-HIGH-INTEGRITY CONNECTION: Not available.

Use the proper CGA connections. **DO NOT USE ADAPTERS.** Additional limited-standard connections may apply. See CGA pamphlets V-1 and V-7 listed below.

Ask your supplier about free Praxair safety literature as referred to in this MSDS and on the label for this product. Further information about this product can be found in the following pamphlets published by the Compressed Gas Association, Inc. (CGA), 4221 Walney Road, 5th Floor, Chantilly, VA 20151-2923, Telephone (703) 788-2700, Fax (703) 961-1831, website: www.cganet.com.

- AV-1 Safe Handling and Storage of Compressed Gas
- G-11.1 Commodity Specification for Argon
- P-1 Safe Handling of Compressed Gases in Containers
- P-14 Accident Prevention in Oxygen-Rich, Oxygen-Deficient Atmosphere
- SB-2 Oxygen-Deficient Atmospheres
- V-1 Compressed Gas Cylinder Valve Inlet and Outlet Connections
- V-7 Standard Method of Determining Cylinder Valve Outlet Connections for Industrial Gas Mixtures
- Handbook of Compressed Gases, Fourth Edition

Praxair asks users of this product to study this MSDS and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this MSDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

PREPARATION INFORMATION:

Product Name: Argon

MSDS# E-4563-L

Date: Oct 15, 2013

DATE: October 15, 2013

DEPARTMENT: Safety and Environmental Services

TELEPHONE: 905-803-1600

The opinions expressed herein are those of qualified experts within Praxair Canada Inc. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of use of the product are not within the control of Praxair Canada Inc., it is the user's obligation to determine the conditions of safe use of the product.

Praxair Canada Inc. requests the users of this product to study this Material Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

Praxair and the *Flowing Airstream* design are trademarks of
Praxair Canada Inc.

Other trademarks used herein are trademarks or registered trademarks of their respective owners.



Praxair Canada Inc.
1 City Centre Drive
Suite 1200
Mississauga, ON L5B 1M2

Safety Data Sheet



Revision Number: 001.3

Issue date: 09/11/2014

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: **LOCTITE LB 8023 MAR GR** IDH number: 275026
ANTISIEZE known as LOCTITE MAR
GR A/S 16OZ EN

Product type: Lubricant Item number: 34026
Restriction of Use: None identified Region: United States

Company address: **Henkel Corporation** Contact information:
One Henkel Way Telephone: (860) 571-5100
Rocky Hill, Connecticut 06067 MEDICAL EMERGENCY Phone: Poison Control Center
1-877-671-4608 (toll free) or 1-303-592-1711
TRANSPORT EMERGENCY Phone: CHEMTREC
1-800-424-9300 (toll free) or 1-703-527-3887
Internet: www.henkelna.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER: CAUSES SEVERE SKIN BURNS AND EYE DAMAGE.

HAZARD CLASS	HAZARD CATEGORY
SKIN CORROSION	1C
SERIOUS EYE DAMAGE	1

PICTOGRAM(S)



Precautionary Statements

Prevention: Do not breathe vapors, mist, or spray. Wash thoroughly after handling. Wear protective gloves, eye protection, and face protection.

Response: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to remove. Continue rinsing. Immediately call a poison control center or physician. Wash contaminated clothing before reuse.

Storage: Store locked up.

Disposal: Dispose of contents and/or container according to Federal, State/Provincial and local governmental regulations.

Classification complies with OSHA Hazard Communication Standard (29 CFR 1910.1200) and is consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Component(s)	CAS Number	Percentage*

IDH number: 275026

Product name: LOCTITE LB 8023 MAR. GR ANTISIEZE known as LOCTITE MAR GR A/S 16OZ EN

Petroleum Based grease	Unknown	30 - 60
Calcium oxide	1305-78-8	10 - 30
Graphite	7782-42-5	10 - 30
Petroleum distillates, hydrotreated, light naphthenic	64742-53-6	5 - 10
Distillates (petroleum), hydrotreated heavy naphthenic	64742-52-5	5 - 10
Octadecanoic acid	57-11-4	0.1 - 1
Boron oxide (B ₂ O ₃)	1303-86-2	0.1 - 1

* Exact percentage is a trade secret. Concentration range is provided to assist users in providing appropriate protections.

4. FIRST AID MEASURES

Inhalation:	Move to fresh air. If symptoms develop and persist, get medical attention.
Skin contact:	Immediately flush skin with plenty of water (using soap, if available). Remove contaminated clothing and footwear. If symptoms develop and persist, get medical attention. Wash clothing before reuse.
Eye contact:	Get medical attention. Immediately flush eyes with plenty of water for at least 15 minutes.
Ingestion:	Get medical attention. Keep individual calm. Do not induce vomiting; contains petroleum distillates and/or aromatic solvents.
Symptoms:	See Section 11.

5. FIRE FIGHTING MEASURES

Extinguishing media:	Water spray (fog), foam, dry chemical or carbon dioxide.
Special firefighting procedures:	Wear a self-contained breathing apparatus with a full face piece operated in pressure-demand or other positive pressure mode. In case of fire, keep containers cool with water spray.
Unusual fire or explosion hazards:	None
Hazardous combustion products:	Oxides of nitrogen. Oxides of carbon.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions:	Do not allow product to enter sewer or waterways.
Clean-up methods:	Scrape up as much material as possible. Clean residue with soap and water. Store in a partly filled, closed container until disposal. Refer to Section 8 "Exposure Controls / Personal Protection" prior to clean up.

7. HANDLING AND STORAGE

Handling:	Use only with adequate ventilation. Prevent contact with eyes, skin and clothing. Do not breathe vapor and mist. Wash thoroughly after handling. Keep container closed.
Storage:	Keep container closed. Keep in a cool, well ventilated area.

For information on product shelf life contact Henkel Customer Service at (800) 243-4874.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous Component(s)	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Petroleum Based grease	5 mg/m ³ TWA mist	5 mg/m ³ TWA mist	None	None
Calcium oxide	2 mg/m ³ TWA	5 mg/m ³ PEL	None	None
Graphite	2 mg/m ³ TWA Respirable fraction.	5 mg/m ³ PEL Respirable fraction. 15 mg/m ³ PEL Total dust. 15 MPPCF TWA	None	None
Petroleum distillates, hydrotreated, light naphthenic	None	500 ppm (2,000 mg/m ³) PEL 5 mg/m ³ PEL Mist.	None	None
Distillates (petroleum), hydrotreated heavy naphthenic	5 mg/m ³ TWA mist 10 mg/m ³ STEL mist	5 mg/m ³ TWA mist 500 ppm (2,000 mg/m ³) PEL 5 mg/m ³ PEL Mist.	None	None
Octadecanoic acid	10 mg/m ³ TWA	None	None	None
Boron oxide (B2O3)	10 mg/m ³ TWA	15 mg/m ³ PEL Total dust.	None	None

Engineering controls:	Provide adequate local exhaust ventilation to maintain worker exposure below exposure limits.
Respiratory protection:	Observe OSHA regulations for respirator use (29 CFR 1910.134). Use NIOSH approved respirator if there is potential to exceed exposure limit(s).
Eye/face protection:	Safety goggles or safety glasses with side shields. Safety showers and eye wash stations should be available.
Skin protection:	Use impermeable gloves and protective clothing as necessary to prevent skin contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Paste
Color:	Black
Odor:	Mild
Odor threshold:	Not available.
pH:	Not available.
Vapor pressure:	Not available.
Boiling point/range:	Not available.
Melting point/ range:	Not available.
Specific gravity:	1.2648
Vapor density:	Not available.
Flash point:	Not applicable
Flammable/Explosive limits - lower:	Not available.
Flammable/Explosive limits - upper:	Not available.
Autoignition temperature:	Not available.
Evaporation rate:	Not available.
Solubility in water:	Insoluble
Partition coefficient (n-octanol/water):	Not available.
VOC content:	< 3 %; 38.4 g/l EPA Method 24
Viscosity:	Not available.
Decomposition temperature:	Not available.

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions of storage and use.
Hazardous reactions:	Will not occur.
Hazardous decomposition products:	Oxides of carbon. Oxides of nitrogen.
Incompatible materials:	Strong acids and strong bases. Strong oxidizing agents. Strong reducing agents.
Reactivity:	Not available.
Conditions to avoid:	Keep away from heat, ignition sources and incompatible materials.

11. TOXICOLOGICAL INFORMATION

Relevant routes of exposure: Skin, Inhalation, Eyes

Potential Health Effects/Symptoms

Inhalation:	Not a hazard under normal conditions of use.
Skin contact:	Causes skin burns.
Eye contact:	Causes serious eye damage.
Ingestion:	Principal hazard of ingestion is aspiration into the lungs and subsequent pneumonitis.

Hazardous Component(s)	LD50s and LC50s	Immediate and Delayed Health Effects
Petroleum Based grease	None	No Data
Calcium oxide	None	Irritant, Corrosive, Eyes
Graphite	None	Lung
Petroleum distillates, hydrotreated, light naphthenic	None	Irritant
Distillates (petroleum), hydrotreated heavy naphthenic	None	Irritant
Octadecanoic acid	Oral LD50 (RAT) = 4.6 g/kg	Irritant
Boron oxide (B2O3)	None	Blood, Central nervous system, Gastrointestinal, Irritant, Kidney, Liver, Lung, Metabolic, Nuisance dust, Skin, Vascular

Hazardous Component(s)	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Petroleum Based grease	No	No	No
Calcium oxide	No	No	No
Graphite	No	No	No
Petroleum distillates, hydrotreated, light naphthenic	No	No	No
Distillates (petroleum), hydrotreated heavy naphthenic	No	No	No
Octadecanoic acid	No	No	No
Boron oxide (B2O3)	No	No	No

12. ECOLOGICAL INFORMATION

Ecological information: Not available.

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Follow all local, state, federal and provincial regulations for disposal.
Hazardous waste number: Not a RCRA hazardous waste.

14. TRANSPORT INFORMATION

The transport information provided in this section only applies to the material/formulation itself, and is not specific to any package/configuration.

U.S. Department of Transportation Ground (49 CFR)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

International Air Transportation (ICAO/IATA)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

Water Transportation (IMO/IWDG)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status: All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.
TSCA 12 (b) Export Notification: None above reporting de minimis
CERCLA/SARA Section 302 EHS: None above reporting de minimis
CERCLA/SARA Section 311/312: Immediate Health, Delayed Health
CERCLA/SARA Section 313: None above reporting de minimis
California Proposition 65: No California Proposition 65 listed chemicals are known to be present.

Canada Regulatory Information

CEPA DSL/NDSL Status: All components are listed on or are exempt from listing on the Canadian Domestic Substances List.

16. OTHER INFORMATION

This safety data sheet contains changes from the previous version in sections: New Safety Data Sheet format.

Prepared by: Lou Fabrizio, Regulatory Affairs Specialist
Issue date: 09/11/2014

DISCLAIMER: The data contained herein are furnished for information only and are believed to be reliable. However, Henkel Corporation and its affiliates ("Henkel") does not assume responsibility for any results obtained by persons over whose methods Henkel has no control. It is the user's responsibility to determine the suitability of Henkel's products or any production methods mentioned herein for a particular purpose, and to adopt such precautions as may be advisable for the protection of property and persons against any hazards that may be involved in the handling and use of any Henkel's products. In light of the foregoing, Henkel specifically disclaims all warranties, express or implied, including warranties of merchantability and fitness for a particular purpose, arising from sale or use of Henkel's products. Henkel further disclaims any liability for consequential or incidental damages of any kind, including lost profits.

98-04324-6



Safety Data Sheet
Talon Compressor & Air Tool Lubricant
Revision Date: 9/15/15

Prepared according to Global Harmonized System (GHS) standards

SECTION 1

CHEMICAL PRODUCT IDENTIFICATION

Fastenal Company
2001 Theurer Boulevard
Winona, MN 55987

Tel: 763-417-1238 - Non-Emergency Questions

Product Trade Name:

Talon Compressor & Air Tool Lubricant

CAS Number: Mixture
Synonyms/Other: N/A
Part Number(s): 0409873, 0409875, 0409877, 0409876, 0409874, 0409872
Recommended Use: Lubricant
Restrictions on Use: Not Determined.
Created Date: 6/3/2015
Preparation/Revision Date: 9/15/2015
Emergency Phone Number: 1-800-424-9300 (CHEMTREC)
SDS CODE: 12159

SECTION 2

HAZARD IDENTIFICATION

Appearance: Clear, Light Yellow
Odor: Petroleum
Classification: Hazardous to the aquatic environment (acute hazard) category 3
Target Organs: Not applicable.
Pictogram(s): None required.
Signal Word: None required.
Hazard Statement: H412 - Harmful to aquatic life with long lasting effects
Other Hazards: Not determined.
Prevention: P273 - Avoid release to the environment
Response: None required.
Storage Procedures: None required.
Disposal: P501 - Dispose of contents and container in accordance with federal, state, and local
Other: See section 11 for complete health hazard information.

SECTION 3

COMPOSITION OF INGREDIENTS

Component	CAS Number	Percentage (by weight)
Zinc alkylthiophosphate	Proprietary	0.1-1.0%
Butylated phenol	128-39-2	0.1-1.0%
Aryl phosphite	101-02-0	<0.1%

The balance of components do not contribute to the overall classification of the fluid, according to the GHS Standard.

SECTION 4**FIRST AID MEASURES**

Eye Contact:	If irritation occurs, cautiously rinse eyes with lukewarm, gently flowing water for 5 minutes, while holding the eyelids open. If eye irritation persists: Get medical advice/attention.
Skin Contact:	Call a doctor if you feel unwell.
Inhalation:	Get medical advice or attention if you feel unwell or are concerned.
Ingestion:	If you feel unwell or concerned: Get medical advice/attention. Rinse mouth. Do NOT induce vomiting. If vomiting occurs naturally, lie on your side, in the recovery position.
Other:	No additional information

SECTION 5**FIRE FIGHTING MEASURES**

Flash Point:	Not determined.
Flammable limits:	Not determined.
Extinguishing media:	Use dry chemical, alcohol foam, all purpose AFFF or carbon dioxide to extinguish fire.
Special firefighting procedures:	DO NOT direct a solid stream of water or foam into hot, burning pools of liquid since this may cause frothing and increase fire intensity. Frothing can be violent and possibly endanger any firefighter standing too close to the burning liquid. Use water spray to cool fire exposed containers and structures until fire is out if it can be done with minimal risk. Avoid spreading burning material with water used for cooling purposes. Wear full firefighting turn-out gear (full Bunker gear), and respiratory protection (SCBA).
Unusual fire & explosion hazards:	Dense smoke may be generated while burning. Toxic fumes, gases or vapors may evolve on burning. High temperatures may create heavy flammable vapors that may settle along ground level and low spots to create an invisible fire hazard.
Byproducts of combustion:	Fires involving this product may release oxides of carbon, phosphorus, nitrogen and sulfur; reactive hydrocarbons and irritating vapors.
Autoignition temperature:	Not determined.
Explosion data:	Not determined. Care should always be exercised in dust/mist areas.
Other:	Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

SECTION 6**ACCIDENTAL RELEASE MEASURES**

Spill control procedures (land):	Immediately turn off or isolate any source of ignition (pilot lights, electrical equipment, flames, heaters, etc.). Evacuate area and ventilate. Personnel wearing proper protective equipment should contain spill immediately with inert materials (sand, earth, chemical spill pads of cotton) by forming dikes. Dikes should be placed to contain spill in a manner that will prevent material from entering sewers and waterways. Large spill, once contained, may be picked up using explosion proof, non-sparking vacuum pumps, shovels, or buckets, and disposed of in suitable containers for disposal. Clean up residue with an appropriate solvent. If a large spill occurs notify appropriate authorities. In case of road spill or accident contact Chem-Trec (800-424-9300).
Spill control procedures (water):	Try to contain large spills with floating booms to prevent spill from spreading. Remove from surface by skimming or with suitable adsorbents. If a large spill occurs notify appropriate authorities (normally the National Response Center or Coast Guard at 800-424-8802).
Waste disposal method:	Do not empty into drains. All disposals must comply with federal, state, and local regulations. The material, if spilled or discarded may be a regulated waste. Refer to state and local regulations. Department of Transportation (DOT) regulations may apply for transporting this material when spilled. See Section 14.
Other:	CAUTION - If spilled material is cleaned up using a regulated solvent, the resulting waste mixture will be regulated.

SECTION 7**HANDLING AND STORAGE**

- Handling procedures:** Keep containers closed when not in use. Do not transfer to unmarked containers. Empty containers retain product residue which may exhibit hazards of material, therefore do not pressurize, cut, glaze, weld, or use for any other purposes. Return drums to reclamation centers for proper cleaning and reuse. Handling temperatures should not exceed 60°C (140°F) to minimize danger of burns. Open containers carefully in a well ventilated area or use appropriate respiratory protection. Wash thoroughly after handling.
- Storage procedures:** Store containers away from heat, sparks, open flame, or oxidizing materials. Extended storage at excessive temperatures may produce odorous and toxic fumes from product decomposition.
- Additional information:** No additional information.

SECTION 8**EXPOSURE CONTROLS / PERSONAL PROTECTION**

Exposure limits/standards for materials that can be formed when handling this product:

	OSHA TWA	OSHA STEL	ACGIH TWA
Contains highly refined petroleum oil	*5 mg/m ³ (PEL)	*10 mg/m ³	*5 mg/m ³ (TLV)

* Exposure limits not defined. Limits used are for, "oil mist".

TWA – Time Weighted Average is the employee's average airborne exposure in any 8-hour work shift of a 40-hour work week which shall not be exceeded.

STEL – Short Term Exposure Limit is the employee's 15-minute time weighted average exposure which shall not be exceeded at any time during a work day unless another time limit is specified.

All base oils, including additive carriers, contain <3.0% DMSO extractable material.

- Personal protection:** Applicable mainly to persons in repeated contact situations such as packaging of product, service/maintenance, and cleanup/spill control personnel.
- Respiratory protection:** None required if ventilation is adequate. Otherwise a respiratory protection program meeting OSHA 1910.134 and ANSI Z88.2 requirements must be followed. Where misting may occur, wear an MSHA/NIOSH approved (or equivalent) half-mask form dust/mist air purifying respirator.
- Eye protection:** Eye protection is strongly recommended. Wear safety glasses with side shields or vented/splash proof goggles (ANSI Z87.1 or approved equivalent).
- Hand protection:** Impervious, chemically resistant gloves such as neoprene or nitrile rubber to avoid skin sensitization and absorption.
- Other protection:** Use of an apron and overboots of chemically impervious materials such as neoprene or nitrile rubber is recommended based on level of activity and exposure. If handling hot material use insulated protective equipment. Launder soiled clothes. Properly dispose of contaminated leather articles and other materials which cannot be decontaminated.
- Local control measures:** Use adequate ventilation when working with material in an enclosed area. Mechanical methods such as fume hoods or area fans may be used to reduce localized vapor/mist areas. If vapor or mist is generated when the material handled, adequate ventilation in accordance with good engineering practice must be provided to maintain concentrations below the specified exposure. Eyewash stations and showers should be available in areas where this material is used and stored.
- Other:** Consumption of food and drink should be avoided in work areas where product is present. Always wash hands and face with soap and water before eating, drinking or smoking.

SECTION 9**PHYSICAL AND CHEMICAL PROPERTIES**

Appearance:	Clear, Light Yellow
Odor:	Petroleum
Odor threshold:	Not determined.
pH:	Not applicable.
Melting/Freezing point:	Not determined.
Initial boiling point:	Not determined.
Boiling range:	Not determined.
Flash point:	207°C
Evaporation rate:	Not determined.
Flammability:	Not determined.
Upper flammable limit:	Not determined.
Lower flammable limit:	Not determined.
Vapor pressure:	Not determined.
Vapor density:	Not determined.
Relative density:	0.870 @ 15.6°C
Solubility:	Negligible in water, miscible in most petroleum solvents.
Partition Coefficient:	Not determined.
Auto-ignition temperature:	Not determined.
Decomposition temperature:	Not determined.
Viscosity:	31 cSt @ 40°C
Other	Not applicable.

SECTION 10**STABILITY AND REACTIVITY****Reactivity**

Chemical stability:	Material is chemically stable at room temperatures and pressure.
Hazardous polymerization:	Will not occur.
Conditions to avoid:	Avoid high temperatures and product contamination.
Incompatibility with other materials:	Avoid contact with acids and strong oxidizing materials.
Decomposition products:	Smoke, carbon monoxide, carbon dioxide, and other aldehydes of incomplete combustion. Oxides of carbon, nitrogen, and sulfur; reactive hydrocarbons and irritating vapors.
Other:	Not applicable.

SECTION 11**TOXICOLOGICAL INFORMATION****Acute toxicity (LD50) *See note at the bottom of the section**

Oral:	>5000 mg/kg
Dermal:	>5000 mg/kg
Inhalation:	>20.0 mg/l
Skin irritation:	Non-irritant
Eye irritation:	Non-irritant
Dermal sensitization:	Not expected to have a sensitizing effect.
Respiratory sensitization:	Not expected to have a sensitizing effect.
Aspiration Hazard:	Not applicable



Chronic Toxicity

Mutagenicity: Not suspected of causing genetic defects
Carcinogenicity: Not suspected of causing cancer.
Reproductive toxicity: Not expected to have adverse effects on reproduction.
STOT-single exposure: Not expected to have adverse effects.
STOT-repeated exposure: Not expected to have long term adverse effects.
Other: *All data in this section is based off calculations from Part 3 of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) utilizing information from the constituent components.

SECTION 12 ECOLOGICAL INFORMATION

Environmental toxicity

Fish: > 100 mg/l.
Invertebrates: > 100 mg/l.
Aquatic plants: > 100 mg/l.
Microorganism: > 100 mg/l.
Persistence/Degradability: This product is not expected to be readily biodegradable.
Bioaccumulation: Not determined.
Mobility in soil: Not determined.
Other: All classifications are based on calculations in Part 4 of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) utilizing information from the constituent components.

SECTION 13 DISPOSAL CONSIDERATIONS

Waste disposal: This product unadulterated by other materials can be classified as a non-hazardous waste. Depending on use, used product may be regulated. Dispose of in a licensed facility. Do not discharge product in to sewer system. Dispose of containers by crushing or puncturing, so as to prevent unauthorized use of used containers. Waste management should be in full compliance with federal, state, and local laws.
Other: The transportation, storage, treatment and disposal of RCRA waste material must be conducted in compliance with 40 CFR 262, 263, 264, 268 and 270. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this SDS incomplete, inaccurate or otherwise inappropriate.

SECTION 14 TRANSPORT INFORMATION

Land Transport (DOT): Not Regulated.
Proper Shipping Name: Not Applicable.
Land Transport (TDG): Not Regulated.
Proper Shipping Name: Not Applicable.
Sea Transport (IMDG): Not Regulated.
Proper Shipping Name: Not Applicable.
Air Transport (IATA): Not Regulated.
Proper Shipping Name: Not Applicable.
Other: Not Applicable.

SECTION 15 REGULATORY INFORMATION

Federal Regulation

Clean water act/oil: Under Section 311 of the Clean Water Act (40 CFR 110) and the Oil Pollution Control Act of 1990, this material is considered an oil. Any spill or discharges that produce a visible sheen or film on surface of water, or in waterways, ditches, or sewers leading to surface water must be reported. Contact the National Response Center at 800-424-8802.

TSCA: All components of this material are listed in the U.S. TSCA Inventory.

Other TSCA: Not applicable.

SARA title III: Section 302/304 extremely hazardous substances:
 None.

Section 311, 312 hazard categorization:

Acute (immediate health effects):	NO
Chronic (delayed health effects):	NO
Fire (hazard):	NO
Reactivity (hazard):	NO
Pressure (sudden release hazard):	NO

Section 313 toxic chemicals:
 No components present are at or greater than the de minimis (minimum reportable) concentration requirements for reporting.

CERCLA: For stationary/moving sources – reportable quantity (due to): Not hazardous due to the petroleum exclusion.

State Regulations

Right-to-know Not determined.

California Proposition 65 This product is known to cause cancer and/or birth defects, or other reproductive harm. According to the Safety Drinking Water and Toxic Enforcement Act of 1986.

Other: A release of this product, as supplied, is exempt from reporting under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). However, releases may be reportable to the Nation Response Center under the Clean Water Act, 33 U.S.C. 1321(b)(3) and (5) - see head of Section 15. Failure to report may result in substantial civil and criminal penalties.

Recommend contacting the local authorities in the event of any type of spill to determine local reporting requirements and also to aid in the cleanup.

SECTION 16 OTHER INFORMATION

	NFPA 704	NPCA-HMIS	KEY
HEALTH:	1	1	0 = Minimal
FIRE:	1	1	1 = Slight
REACTIVITY:	0	0	2 = Moderate
SPECIFIC HAZARD:	None	N/A	3 = Serious
PROTECTION INDEX:	N/A	B	4 = Severe

Version: II

INFORMATION PROVIDED IN THIS SDS IS CONSIDERED ACCURATE AND RELIABLE BASED ON INFORMATION ISSUED FROM INTERNAL AND OUTSIDE SOURCES TO THE BEST OF THE AUTHORS' KNOWLEDGE. HOWEVER, THE AUTHOR'S MAKE NO REPRESENTATIONS, GUARANTEES OR WARRANTIES, EXPRESSED OR IMPLIED, OF MERCHANTABILITY OR FITNESS FOR THE PARTICULAR PURPOSE, REGARDING THE ACCURACY OF SUCH INFORMATION OR THE RESULT TO BE OBTAINED FROM THE USE THEREOF, OR AS TO THE SUFFICIENCY OF THE INFORMATION HEREIN PRESENTED. THE AUTHORS ASSUME NO RESPONSIBILITY FOR INJURY TO RECIPIENT OR TO THIRD PERSONS OR FOR ANY DAMAGE TO ANY PROPERTY AND RECIPIENT ASSUMES ALL SUCH RISKS.

Revisions / Comments: Section 15 update 9/15/2015

Product Name: Acetylene

MSDS No.: E-4559-M

Date: Oct 15, 2013

NONE.

Praxair Material Safety Data Sheet

1. Chemical Product and Company Identification

Product Name: Acetylene	Trade Name: Acetylene
Product Use: Metal industry: Welding and cutting of metals.	
Chemical Name: Acetylene	Synonym: Acetylen, Ethine, Ethyne, Narcylene
Chemical Formula: C ₂ H ₂	Chemical Family: Alkyne
Telephone: Emergencies: * 1-800-363-0042	Supplier /Manufacture: Praxair Canada Inc. 1 City Centre Drive Suite 1200 Mississauga, ON L5B 1M2
	Phone: 905-803-1600 Fax: 905-803-1682

**Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier or Praxair sales representative.*

2. Hazards Identification

Emergency Overview

DANGER! Flammable gas under pressure. Can form explosive mixtures with air. Fusible plugs in top, bottom, or valve melt at 98 - 104 C. Do not discharge at pressures above 103 kPa. May cause dizziness and drowsiness. Self-contained breathing apparatus may be required by rescue workers. At normal temperature and pressure, commercial acetylene is a colourless gas with a distinctive garlic-like odour.

ROUTES OF EXPOSURE: Inhalation.

EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:

- INHALATION:** Asphyxiant. Effects are due to lack of oxygen. Moderate concentrations may cause headaches, drowsiness, dizziness, excitation, excess salivation, vomiting, and unconsciousness. The vapour from a liquid (acetone) release may also cause incoordination and abdominal pain. Lack of oxygen can kill.
- SKIN CONTACT:** No harm expected. Liquid (acetone) may cause frostbite.
- SKIN ABSORPTION:** No harm expected. Liquid (acetone) may cause frostbite.
- SWALLOWING:** An unlikely route of exposure, but frostbite of the lips and mouth may result from contact with the liquid (acetone). If swallowed, the liquid may cause nausea.
- EYE CONTACT:** Vapour containing acetone may cause irritation. Liquid (acetone) may cause irritation and frostbite.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE:

NOTE: Acetylene cylinders are filled with a porous material containing acetone into which the acetylene is dissolved. ACGIH has established a TLV-TWA of 500 ppm for acetone and a STEL of 750 ppm.

WORKING WITH WELDING AND CUTTING MAY CREATE ADDITIONAL HEALTH HAZARDS. FUMES AND GASES can be dangerous to your health and may cause serious lung disease.* Keep your head out of the fumes. Do not breathe fumes and gases caused by the process. Use enough ventilation, local exhaust, or both to keep fumes and gases from your breathing zone and the general area. The type and amount of fumes and gases depend on the equipment and supplies used. Possibly dangerous materials may be found in fluxes, coatings, gases, metals etc. Obtain a Material Safety Data Sheet (MSDS) for each material used. Air samples can be used to find out what respiratory protection is needed. Short term overexposure to fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat, or eyes.

***NOTES TO PHYSICIAN:**

Acute: Gases, fumes, and dusts may cause irritation to the eyes, lungs, nose, and throat. Some toxic gases associated with welding and related processes may cause pulmonary edema, asphyxiation, and death. Acute overexposure may include signs and symptoms such as watery eyes, nose and throat irritation, headache, difficulty breathing frequent coughing, or chest pains.

Chronic: Protracted inhalation of air contaminants may lead to their accumulation in the lungs, a condition which may be seen as dense areas on chest x-rays. The severity of change is proportional to the length of exposure. The changes seen are not necessarily associated with symptoms or signs of reduced lung function or disease. In addition, the changes on x-rays may be caused by non-work related factors such as smoking, etc.

OTHER EFFECTS OF OVEREXPOSURE:

None known.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

Repeated or prolonged exposure is not known to aggravate medical condition.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:

None

CARCINOGENICITY:

Not listed as carcinogen by OSHA, NTP or IARC.

3. Composition and Information on Ingredients

COMPONENTS	CAS NUMBER	CONCENTRATION % by Mole
Acetylene	74-86-2	>99.9*

*Note: Acetylene cylinders are filled with a porous material containing acetone (CAS 67-64-1) into which the acetylene is dissolved.

4. First Aid Measures

INHALATION:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

SKIN CONTACT:

In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

SWALLOWING:

If liquid is swallowed, do not induce vomiting. Call a physician.

EYE CONTACT:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. See a physician, preferably an ophthalmologist, immediately.

NOTES TO PHYSICIAN:

Aspired acetone may cause severe lung damage. If a large quantity of material has been swallowed, stomach contents should be evacuated quickly in a manner which avoids aspiration. Otherwise, treatment should be directed at the control of symptoms and the clinical condition. No specific antidote is known.

5. Fire Fighting Measures

FLAMMABLE : Yes. **IF YES, UNDER WHAT CONDITIONS?** See "Unusual Fire and Explosion Hazards" in this section.

EXTINGUISHING MEDIA: See paragraphs below.

PRODUCTS OF COMBUSTION: These products are carbon oxides (CO, CO₂).

PROTECTION OF FIREFIGHTERS:

DANGER! Refer to CGA safety bulletin SB-4, "Handling Acetylene Cylinders in Fire Situations". Evacuate all personnel from danger area. Immediately cool containers with water spray from maximum distance taking care not to extinguish flames. Remove ignition sources if without risk. If flames are accidentally extinguished, explosive re-ignition may occur. Use self-contained breathing apparatus. Stop flow of gas if without risk while continuing cooling water spray. Remove all containers from area of fire if without risk. Allow fire to burn out.

SPECIFIC PHYSICAL AND CHEMICAL HAZARDS:

Extremely flammable gas. Forms explosive mixtures with air and oxidizing agents. Container may rupture due to heat of fire. Do not extinguish flames due to possibility of explosive re-ignition. No part of a container should be subjected to temperature higher than 52 C. Most containers are provided with a pressure relief device designed to vent contents when they are exposed to elevated temperature. Contact with copper, silver, or mercury or their alloys or halogens can cause explosion. Vapours form from this product and may travel or be moved by air currents and ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharges, or other ignition sources at locations distant from product handling point. Explosive atmospheres may linger. Before entering area, especially confined areas, check atmosphere with approved device.

SENSITIVITY TO IMPACT:

Avoid impact against container.

SENSITIVITY TO STATIC DISCHARGE:

Possible, See Section 7.

PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS:

Firefighters should wear self-contained breathing apparatus and full fire-fighting turnout gear.

FLAMMABLE LIMITS IN AIR, % by volume:

LOWER: 2.5

UPPER: 100

FLASH POINT: CLOSED CUP: -17.8°C (0°F). (Tag)

AUTOIGNITION TEMPERATURE: 305°C (581°F)

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

Personal Precautions:

DANGER! **Flammable, high-pressure gas.** Forms explosive mixtures with air. Immediately evacuate all personnel from danger area. Use self-contained breathing apparatus where needed. Remove all sources of ignition if without risk. Reduce gas with fog or fine water spray. Shut off flow if without risk. Ventilate area or move cylinder to a well-ventilated area. Flammable gas may spread from leak. Before entering area, especially confined areas, check atmosphere with an appropriate device.

Environmental Precautions:

Prevent waste from contaminating the surrounding environment. Keep personnel away. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, provincial, and local regulations. If necessary, call your local supplier for assistance.

7. Handling and Storage

PRECAUTIONS TO BE TAKEN IN HANDLING:

Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop. All piped acetylene systems and associated equipment must be grounded. Electrical equipment must be non-sparking or explosion-proof. Leak check with soapy water; never use a flame. Never use copper piping for acetylene service; use only steel or wrought iron. Open acetylene cylinder valves the minimum amount required for acceptable flow; this will allow you to close valves as quickly as possible in an emergency. Do not open acetylene cylinder valves more than 1½ turns. Never use acetylene at pressures exceeding 103.5 kPa (15 psig). Acetylene cylinders are heavier than other cylinders because they are packed with a porous material and acetone. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Open valve slowly. If valve is hard to open, discontinue use and contact your supplier. For other precautions in using acetylene, see section 16.

PRECAUTIONS TO BE TAKEN IN STORAGE:

Store and use with adequate ventilation. Separate flammable cylinders from oxygen, chlorine, and other oxidizers by at least 6.1 m or use a barricade of non-combustible material. This barricade should be at least 1.53 m high and have a fire resistance rating of at least ½ hour. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Post "No Smoking or Open Flames" signs in storage and use areas. There must be no sources of ignition. All electrical equipment in storage areas must be explosion-proof. Storage areas must meet national electric codes for Class 1 hazardous areas. Store only where temperature will not exceed 52 C. Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.

OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE:

Flammable high-pressure gas. Use only in a closed system. Use piping and equipment adequately designed to withstand pressures to be encountered. Use only spark-proof tools and explosion-proof equipment. Keep away from heat, sparks, and open flame. **May form explosive mixtures with air.** Ground all equipment. **Gas can cause rapid suffocation due to oxygen deficiency.** Store and use with adequate ventilation. Close valve after each use; keep closed even when empty. **Prevent reverse flow.** Reverse flow into cylinder may cause rupture. Use a check valve or other protective device in any line or piping from the cylinder. **When returning cylinder to supplier, be sure valve is closed, then install valve outlet plug tightly. Never work on a pressurized system. If there is a leak, close the cylinder valve. Vent the system down in a safe and environmentally sound manner in compliance with all federal, provincial, and local laws; then repair the leak. Never place a compressed gas cylinder where it may become part of an electrical circuit.**

RECOMMENDED PUBLICATIONS:

Additional information on storage, handling, and use of this product is provided in **NFPA 55: Standard for the Storage, Use, and Handling of Compressed and Liquefied Gases in Portable Cylinders**, published by the National Fire Protection Association.

See also Praxair publication P-14-153, *Guidelines for Handling Gas Cylinders and Containers*. Obtain from your local supplier.

8. Exposure Controls/Personal Protection

INGREDIENTS	CAS NUMBER	LD ₅₀ (Species & Routes)	LC ₅₀ (Rat, 4 hrs.)	Exposure Limits
Acetylene	74-86-2	Not available.	Not available.	Simple asphyxiant.

IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH):**VENTILATION/ENGINEERING CONTROLS:**

LOCAL EXHAUST: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. Train the worker to keep his head out of the fumes.

MECHANICAL (General): Use a local exhaust system, if necessary, to maintain an adequate supply of oxygen in the worker's breathing zone.

SPECIAL: Use only in a closed system.

OTHER: Use local exhaust ventilation or handle in a ventilated enclosure.

PERSONAL PROTECTION:

RESPIRATORY PROTECTION: Use respirable fume respirator or air supplied respirator when working in confined space or where local exhaust or ventilation does not keep exposure below TLV (acetone) or the applicable TLVs for fumes, gases, and other by-products of welding with acetylene. Select in accordance with the provincial regulations or guidelines. Selection should also be based on the current CSA standards Z94.4, "Selection, care and use of respirators". Respirators should be approved by NIOSH and MSHA

SKIN PROTECTION: Welding gloves recommended.

EYE PROTECTION: Wear safety glasses when handling cylinders.

Select in accordance with the current CSA standard Z94.3, "Industrial Eye and Face Protection", and any provincial regulations, local bylaws or guidelines.

OTHER PROTECTIVE EQUIPMENT: Metatarsal shoes for cylinder handling. Protective clothing where needed. Cuffless trousers should be worn outside the shoes. Select in accordance with the current CSA standard Z195, "Protective Foot Wear", and any provincial regulations, local bylaws or guidelines.

9. Physical and Chemical Properties

PHYSICAL STATE: Gas.	FREEZING POINT: -82.2°C (-116°F) 6170 KPa abs	pH: Not applicable.
BOILING POINT: -75.2°C (-103.4°F) 6170 KPa abs	VAPOUR PRESSURE: 4476.8 kPa (@ 20°C)	MOLECULAR WEIGHT: 26.04 g/mole
SPECIFIC GRAVITY: LIQUID (Water = 1): Not applicable.	SOLUBILITY IN WATER: Not applicable.	
SPECIFIC GRAVITY: VAPOUR (air = 1): 0.906	EVAPORATION RATE (Butyl Acetate=1): Not applicable.	COEFFICIENT OF WATER/OIL DISTRIBUTION: Not applicable.
VAPOUR DENSITY: 0.00117 g/ml @ 0 C	% VOLATILES BY VOLUME: 100% (v/v).	ODOUR THRESHOLD: 657 mg/m3
APPEARANCE & ODOUR: Colourless. Odour: Acetylene of 100% purity is odourless, but commercial acetylene has a distinctive garlic-like odour.		

10. Stability and Reactivity

STABILITY:	Unstable.
CONDITIONS OF CHEMICAL INSTABILITY:	Stable as shipped. Avoid use at pressure above 15 psig.
INCOMPATIBILITY (materials to avoid):	Avoid contact with copper, silver, mercury or their alloys, oxidizing agents, acids, halogens, moisture.
HAZARDOUS DECOMPOSITION PRODUCTS:	Thermal decomposition or burning may produce carbon monoxide/carbon dioxide. The welding and cutting process may form reaction products such as carbon monoxide and carbon dioxide.
HAZARDOUS POLYMERIZATION:	Will not occur.
CONDITIONS TO AVOID:	Elevated temperatures and pressures and/or presence of a catalyst.
CONDITIONS OF REACTIVITY:	Fire or explosion may result from use at elevated temperatures & pressures or from use with incompatible materials.

11. Toxicological Information

ACUTE DOSE EFFECTS: No known effects from acetylene gas. The welding process may generate hazardous fumes and gases. (See section 8, 10, 15 and 16.)

STUDY RESULTS:

None known.

12. Ecological Information

No adverse ecological effects expected. This product does not contain any Class I or Class II ozone-depleting chemicals. The components of this mixture are not listed as marine pollutants by TDG Regulations.

13. Disposal Considerations

WASTE DISPOSAL METHOD: Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier.

14. Transport Information

TDG/IMO SHIPPING NAME: Acetylene, dissolved

HAZARD CLASS:	CLASS 2.1: Flammable gas.	IDENTIFICATION #:	UN1001	PRODUCT REPORTABLE QUANTITY (PRQ):
				Any accidental release in a quantity that could pose a danger to public safety or any sustained release of 10 minutes or more.

SHIPPING LABEL(s): Flammable gas

PLACARD (When Required): Flammable gas

SPECIAL SHIPPING INFORMATION:

Cylinders should be transported in a secure position, in a well-ventilated vehicle. Cylinders transported in an enclosed, non-ventilated compartment of a vehicle can present serious safety hazards.

15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, provincial, and local regulations. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS (Canada): CLASS A: Compressed gas.
CLASS B-1: Flammable gas.
CLASS F: Dangerously reactive material.

This product is on the DSL list.

International Regulations:

EINECS: Not available.

DSCL (EEC): This product is not classified according to the EU regulations.

International Lists: No products were found.

16. Other Information**MIXTURES:**

When two or more gases, or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist, or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

HAZARD RATING SYSTEM:**HMIS RATINGS:**

HEALTH 2

FLAMMABILITY 4

PHYSICAL HAZARD 2

STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:

THREADED:	CGA-510, CGA-520, CGA-200
PIN-INDEXED YOKE:	None.
ULTRA-HIGH-INTEGRITY CONNECTION:	None.

Use the proper CGA connections. **DO NOT USE ADAPTERS.** Additional limited-standard connections may apply. See CGA pamphlets V-1 and V-7 listed below.

Ask your supplier about free Praxair safety literature as referred to in this MSDS and on the label for this product. Further information about this product can be found in the following pamphlets published by the Compressed Gas Association, Inc. (CGA), 4221 Walney Road, 5th Floor, Chantilly, VA 20151-2923, Telephone (703) 788-2700, Fax (703) 961-1831, website: www.cganet.com.

AV-1	Safe Handling and Storage of Compressed Gas
G-1	Acetylene
G-1.1	Commodity Specification for Acetylene
G-1.2	Recommendation for Chemical Acetylene Metering
G-1.3	Acetylene Transmission for Chemical Synthesis
P-1	Safe Handling of Compressed Gases in Containers
P-14	Accident Prevention in Oxygen-Rich, Oxygen-Deficient Atmosphere
SB-2	Oxygen-Deficient Atmospheres
V-1	Compressed Gas Cylinder Valve Inlet and Outlet Connections
V-7	Standard Method of Determining Cylinder Valve Outlet Connections for Industrial Gas Mixtures
---	Handbook of Compressed Gases, Fifth Edition

Praxair asks users of this product to study this MSDS and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this MSDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

PREPARATION INFORMATION:

DATE: Oct 15, 2013
DEPARTMENT: Safety and Environmental Services
TELEPHONE: 905-803-1600

The opinions expressed herein are those of qualified experts within Praxair Canada Inc. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of use of the product are not within the control of Praxair Canada Inc., it is the user's obligation to determine the conditions of safe use of the product.

Praxair Canada Inc. requests the users of this product to study this Material Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

Praxair and the Flowing Airstream design are trademarks of Praxair Canada Inc.

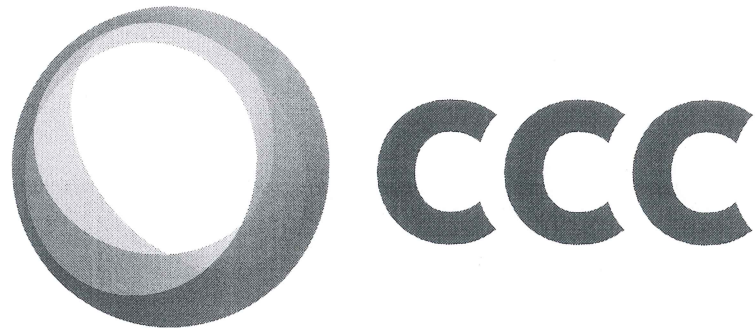
Other trademarks used herein are trademarks or registered trademarks of their respective owners.



Praxair Canada Inc.
1 City Centre Drive
Suite 1200
Mississauga, ON L5B 1M2

32-17573-6

DEC 02 2015



Canada Colors and Chemicals Limited

**152 Kennedy Road South
Brampton, Ontario
Canada
L6W 3G4**

General Inquiry Number: (905) 459-1232

**Material Safety Data Sheet
Attached**

This product is distributed by
Canada Colors and Chemicals Limited
General Inquiry: (905) 459-1232
24 Hour Emergency: (416) 444-2112



CCC: Product Code: 211902

CCC: Product Name: BARIUM CARBONATE 99% PWD

正本
ORIGINAL

唐山昊勗成化工产品销售有限公司®

TANGSHAN HAOXUCHENG CHEMICAL TRADING CO., LTD.

NO.118-8, XINHUA WEST ROAD, ROOM33, NO.15 BLDG TANGSHAN 063000 CHINA

Material Safety Data Sheet

Barium Carbonate

(Canadian Vision)

SECTION 1- PRODUCT AND COMPANY IDENTIFICATION

Product Identification:

Product Name:	Barium Carbonate	Trade Names:	Barium Carbonate
Chemical Name:	Barium carbonate	Product Grade:	Tech-grade
Chemical Family:	Inorganic	Catalog Codes:	TSHXC-BC
Synonym:	Barium salt; Barium monocarbonate: Carbonic acid, barium salt (1:1)		
Molecular Formula	BaCO ₃		
Molecular Weight:	197.37 g/mol		

Identified Usage: Glass and ceramic industry, Construction materials additives, Pigment industry, Electronic industry, Treatment of brines, Precipitation agents, Laboratory reagent, and Chemical intermediate.

Company Identification:

TANGSHAN HAOXUCHENG CHEMICAL TRADING CO., LTD.

Address:

No.118-8, XINHUA WEST RD, ROOM33, NO.15 BLDG TANGSHAN HEBEI Prov. P.R. CHINA 063000

24 hour Emergency Call:

++86 315 5269898 FAX: ++86 315 5267279

Contact Person:

Park Zhang; John Yu

SECTION 2- HAZARDS IDENTIFICATION

WHMIS Classification and labeling:

- Class D1B Toxic Material Causing Immediate and Serious Toxic Effects $\geq 1\%$



This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR

Emergency Overview:

Toxic! May be fatal if swallowed. Harmful if inhaled. May cause irritation to skin, eyes and respiratory tract. Affects Muscles (including the heart), and central nervous system.

General Information:

Appearance: Solid Powder **Colour:** White **Odour:** Odorless

Acute Health Effects:

Eye: May cause moderate irritation, redness and pain.

Skin: May cause slight irritation with burning pain, itching and redness.

Inhalation: May cause severe irritation of the respiratory tract with sore throat, coughing, shortness of breath. Excessive exposures may produce lung damage.

Ingestion: Harmful if swallowed. Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause muscle paralysis, respiratory failure, and possible death.

Chronic Health Effects:

Long-term inhalation of dust may lead to deposition in lungs in sufficient quantities to produce baritosis - a benign pneumoconiosis. This produces a radiological picture. Symptoms and abnormal signs may not be present.

Carcinogenicity: None

Other Toxicity Effects: Additional information See Toxicological Information (Section 11)

Environmental Effects: Additional information See Environmental Information (Section 12)

SECTION 3- COMPOSITION, INFORMATION ON INGREDIENTS

Composition:

Chemical Name	CAS#	LD50 [ORAL, RAT]	ACGIH- TLV	% By Weight	EINECS/ELINCS
Barium Carbonate BaCO3	513-77-9	418mg kg ⁻¹	TWA=0.5mg/m ³ as Ba	≥99%	208-167-3

SECTION 4-FIRST AID MEASURES

Eye Contact:	<p>Immediately flush eyes with plenty of water for at least 15 minutes. Lifting upper and lower eyelids occasionally.</p> <p>If eye irritation persists, get medical attention.</p>
Skin:	<p>Remove any contaminated clothing.</p> <p>Wash the skin immediately with soap and water for at least 15 minutes.</p> <p>Get medical attention if irritation develops or persists.</p> <p>Wash clothing before reuse.</p>
Inhalation:	<p>Remove the subject from dusty environment and let him blow his nose.</p> <p>Keep subject warm.</p> <p>If required, provide artificial respiration. Do NOT use mouth-to-mouth resuscitation.</p> <p>If symptoms persist, get medical attention immediately.</p>
Ingestion:	<p>Get medical attention immediately. Take victim immediately to hospital.</p> <p>Conscious:</p> <p>If swallowed, rinse mouth with water immediately (only if the person is conscious).</p> <p>Give to drink 30 grams of sodium sulfate in 250 ml of fresh water.</p> <p>Do NOT induce vomiting unless directed to do so by medical personnel.</p> <p>Artificial respiration and/or oxygen may be necessary.</p> <p>Unconscious but Breathing:</p> <p>Never give anything by mouth to an unconscious person.</p> <p>Artificial respiration and/or oxygen may be necessary.</p>
Notes to Physician:	<p>Treat symptomatically and supportively. Sodium sulfate can be given in case of ingestion to precipitate out the barium as barium sulfate.</p> <p>Monitor patients with significant ingestion for respiratory, cardiovascular, and blood pressure status. Watch for cardiac arrhythmias, respiratory failure due to flaccid paralysis of respiratory muscles, pulmonary edema, vocal cord paralysis, severe hypertension, and late effect kidney failure.</p> <p>Acute barium poisoning results in hypokalemia (low potassium levels). The administration of fluids containing dilute concentrations of potassium salts may be indicated.</p>

SECTION 5-FIRE-FIGHTING MEASURES

General Information:	Material will not burn.
Flammability Class (WHMIS):	Not Regulated
Extinguishing Media:	Use extinguishing media that are appropriate to local circumstances and the surrounding environment.
Unsuitable Extinguishing Media:	None
Special Exposure Hazards in a Fire:	Non-combustible
Hazardous Decomposition Products:	Carbon monoxide, carbon dioxide, barium oxide.
Special Protective Equipment for Firefighters:	
	Wear self-contained breathing apparatus (NIOSH-approved) with full facepiece operated in the pressure demand or other positive pressure mode.
	Fire fighters must wear fire resistant personnel protective equipment.
	Wear chemical resistant oversuit.
Additional Information:	
Sensitivity to Mechanical Impact:	Not expected to be sensitive to mechanical impact.
Sensitivity to Static Discharge:	Not expected to be sensitive to mechanical impact.
Special Remarks on Fire Hazards:	Non-combustible
Special Remarks on Explosion hazards:	Not Available

SECTION 6- ACCIDENTAL RELEASE MEASURES

Personal Precautions:	Use personal protective equipment. Sweep-up to eliminate slipping hazard Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation. Refer to protective measures listed in sections 7 and 8.
Environmental Precautions:	Shall not be released into the environment.
Methods for Cleaning Up:	Avoid dust formation. Ensure adequate ventilation. Sweep up and shovel into a convenient waste disposal container. Ventilate area and wash spill site after material pickup is complete. Large spills: Dike for later disposal. Place unusable material into a closed labeled container compatible with the product. Treat recovered material as described in the section 13 " WASTE DISPOSAL " .
Additional Information:	Poisonous solid. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

SECTION 7- HANDLING & STORAGE

Handling:	Avoid breathing dust, vapor, mist, or gas. Avoid contact with skin and eyes. Use only in well-ventilated areas. Use only equipment and materials, which are compatible with the product.
Storage:	Keep container tightly closed. Keep container in a cool, dry, well-ventilated area. Keep away from Incompatible products.
Packaging material:	Paper + PE coating.
Other information:	Avoid dust formation. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

SECTION 8- EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limit Values---

Authorized Limit Values:

Barium Carbonate

US. ACGIH Threshold Limit Values 01 2006:

TWA=On**0.5mg/m3** as Ba in soluble compounds of Ba

Canada. Ontario OELs. (Ministry of Labor - Control of Exposure to Biological or Chemical Agents) 12 2007:

TWA=On**0.5mg/m3** as Ba in soluble compounds of Ba

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) 2006:

TWA=On**0.5mg/m3** as Ba in soluble compounds of Ba

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2) 10 2006

TWA=On**0.5mg/m3** as Ba in soluble compounds of Ba

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended) 07 2007

TWA= **On0.5mg/m3** as Ba in soluble compounds of Ba

Time Weighted Average (TWA) for 8 hour workdays

No Specific TLV STEL (Short Term Exposure Level) has been set.

Excursions in exposure level may exceed 3 times the TLV TWA for no more than a total of **30** minutes during a workday and under no circumstances should they exceed **5 times** the TLV TWA.

Engineering Controls:

Ensure adequate ventilation.

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.

If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Apply technical measures to comply with the occupational exposure limits.

Personal Protective Equipment:

Respiratory Protection:

In case of insufficient ventilation, wear suitable respiratory equipment.

Use respirators and components tested and approved under appropriate government standards such as NIOSH/MSHA approved air purifying dust or mist respirator or European Standard EN 149.

Self-contained breathing apparatus in medium confinement/insufficient oxygen/in case of large uncontrolled emissions/in all circumstances when the mask and cartridge do not give adequate protection

Immediately Dangerous to life and health (**IDLH**) value: **50mg/m3** as Ba. That means the most protective respiratory equipments are failed to work. Evacuate the people from the contaminated environment a.s.a.p.

Hand Protection:

Chemical protective gloves. Recommended materials: PVC, neoprene or rubber.

Eyes:

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin:

Wear impervious protective clothing made from cotton, canvas, plastic, and rubber.

Including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Hygiene Measures:

Safety shower should be nearby and ready for use.

Eye wash bottle with pure water should be ready for use.

Do not eat, drink or smoke in areas where this material is handled.

Wash contaminated clothing before reuse.

Handle in accordance with good industrial hygiene and safety practice.

SECTION 9-PHYSICAL&CHEMICAL PROPERTIES

Physical Appearance:	Solid Powder
Colour:	White
Odor:	Odorless
Important Health, Safety and Environmental Information:	
pH:	8.0 - 10.0 (saturated aqueous solution) @20 °C (68 °F)
Boiling Point:	1300°C (2372°F)- 1450°C (2,642°F)
Melting Point:	811 °C (1491.8°F)
Decomposition Temperature:	> 1,450 °C (2,642 °F)
Relative Density:	4.3-4.43g/cm ³ @ 20°C(68 °F)
Bulk Density:	From 400 – 2,000 kg/m ³ (25_125 lbs/ft.3)
Granulometry:	Not Available
Vapor Pressure (mm Hg):	0 @ 20C (68F) Essentially
Vapor Density (air=1):	Not Applicable
Viscosity:	Not Applicable
Evaporation Rate:	Not Applicable
Partition coefficient:	Not Applicable (inorganic; dissociation)
Solubility in Water:	Almost insoluble in water --- ca.16mg/l@ 16°C; ca.20mg/l @20°C; ca.60mg/l@100°C
Solubility:	<i>Soluble</i> in HCl, HNO ₃ , ethanol; <i>Insoluble</i> in H ₂ SO ₄ .
Flash Point:	Non-combustible
Auto flammability:	Non-combustible
Flammability:	Non-combustible
Explosive Properties:	Not Explosive
Oxidizing Properties:	Not Oxidizer

SECTION 10-STABILITY AND REACTIVITY

Stability:	Stable under recommended storage conditions.
Condition to Avoid:	None Decomposition will begin @ 1.450 °C (2.642 °F)

Materials and Substances to Avoid:

Incompatible with acids.

Hazardous Decomposition Products:

Carbon monoxide, carbon dioxide, barium oxide.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Contact with acids causes formation of Carbon dioxide gas that may cause suffocation in enclosed spaces.

Special Remarks on Corrosivity: Not Available

Polymerization: Will not occur

SECTION 11- TOXICOLOGICAL INFORMATION

RTECS number: CQ860000
Routes of Entry: Eye and Skin Contact; Inhalation; Ingestion
Acute Toxicity:

Substance:	LD50 [ORAL, RAT]	LD50 [DERMAL, RABBIT]	LC50 [INHALATION, RAT]
Barium carbonate	418mg kg ⁻¹	-----	115ppm-24hours

Acute Toxicity, Other Information:

ORL-HMN LDLO 17 mg kg⁻¹ ORL-MAN LDLO 800 mg kg⁻¹ IPR-MUS LD50 200 mg kg⁻¹ IVN-RAT LDLO 20 mg kg⁻¹

Corrosiveness and Irritation:

Skin Irritation: (Experimental)--- Irritating
 Eyes Irritation: (Experimental)--- Irritating

Sensitization: No Specific Data Available

Signs and Symptoms of Exposure (Ingestion):

Excessive salivation, vomiting, severe abdominal pain, and violent purging with watery and bloody stools; a slow and often irregular pulse and a transient elevation in arterial blood pressure; tinnitus, giddiness and vertigo; muscle twitchings, progressing to convulsions and/or paralysis; dilated pupils with impaired accommodation; confusion and increasing somnolence, without coma; collapse and death from respiratory failure and cardiac arrest.

Chronic Health Effects:

Inhalation, Repeated exposure, rat, Target Organs: cardio-vascular system, hematology system, Respiratory system, NOEL: 5,2 mg/m3, observed effect

Oral, Repeated exposure, rat/mouse, Target Organs: cardio-vascular system, hematology system, renal system, adrenal glands, observed effect

Repeated Dose Toxicity:

Animal study indicates

Inhalation- rat, 1month: changes in red and white blood picture, inhibition of enzyme activity, influence on metabolism and vascular tonus as well as reduction in the detoxifying function of the liver; desquamative bronchitis, focal thickening of the interalveolar septa in the lung tissue; signs of granular dystrophy in heart, liver, and kidneys.

Inhalation-rat, 4month: considerable drop in weight gain, increased arterial pressure, decreased hemoglobin value, leucocytosis, thrombopenia, decrease blood sugar, increased blood phosphorus; increased urine calcium, decreased serum protein, inhibition of cholinesterase and alk; phosphatase activity, impaired detoxifying liver function, disturbance of cardiac conductivity; the indices did not disappear after period of recovery; pathology; mild protein dystrophy, moderate perivascular and peribronchial sclerosis with focal thickening of the interalveolar septa and collagenation in the lungs.

Intratracheal-rat 9months: Initial sclerotic changes in lung tissue; Regarded as the result of productive inflammation.

Carcinogenicity: Not classed as carcinogenic by ACGIH (A4), IARC, OSHA, NTP or EPA.

Genetic toxicity in Vitro and Vivo: No Specific Data Available

Toxicity for Reproduction:

Animal study indicates (*Inhalation, rat, 70days; 4 months*) --- caused maternal and paternal effects. Paternal: decrease of the number of sperm producing ability. Maternal: damage to the ovaries and fallopian tubes.

Increase prenatal mortality in offspring

No Teratogenic changes.

Mutagenicity Data: No Specific Data Available

Developmental Toxicity and Teratogenicity:

Animal study indicates (*Oral, Repeated exposure, rat*) --- increased mortality in offspring of post partum; leucocytosis, disturbance in hepatic synthetic function; increased hippuric aciduria in offspring.

Additional Information:

Barium carbonate is harmful after ingestion due to its transformation to very soluble BaCl₂ in the stomach and substantial absorption of the Ba ion (cause nervous, cardiovascular, respiratory and gastro-intestinal troubles).

SECTION 12- ENVIRONMENTAL INFORMATION

Ecotoxicity Effects:

Acute Toxicity:

Acute Prolonged Toxicity to Fish: Fish: *Gambusia affinis* --- 10g/l (>96 hours)

Acute Toxicity to Aquatic Invertebrates: No Specific Data Available

Toxicity to Aquatic Plants e.g. Algae: No Specific Data Available

Chronic Ecotoxicity: No Specific Data Available

Mobility: Air--- transport as solid aerosols
Water/soil --- poorly soluble in water. Barium mobility is reduced by precipitation of barium carbonate and sulfate.

Persistence and Degradability: Persistent because of precipitation in Aquatic environments and of stable form in soil, (Whiterite) Cation precipitation happens, especially in presence of sulfates or carbonates in the nature.

Biodegradation: Not Applicable

Bioaccumulative Potential: Potential accumulation of the cation.

Results of PBT Assessment: No Specific Data Available

Addition information: Can be dangerous if allowed to enter drinking water intakes. Do not contaminate domestic or irrigation water supplies.

SECTION 13- WASTE DISPOSAL

Product Disposal: Dispose of wastes in an approved waste disposal facility.
Do not dispose of wastes with normal garbage, or to sewer systems.
In accordance with all federal, state, and local environmental regulations.

Package Disposal: Containers that cannot be cleaned must be treated as waste and disposed of in an approved industrial incineration facility.

RCRA Hazardous Waste: Listed RCRA Hazardous Waste (40 CFR 302) - No
Unlisted RCRA Hazardous Waste (40 CFR 302) - Yes
D005 (barium containing waste)

Additional Information: Reevaluation of the product may be required by the user at the time of disposal since the product uses, transformations, mixtures and processes may influence waste classification.

SECTION 14- TRANSPORT INFORMATION

CANADA-TDG

Shipping Name:	Class	UN/NA	PG	Label(s)	M P	ERG
Barium Compound, N.O.S (barium Carbonate)	6.1	1564	III	Toxic	No	154

RID/ADR

Barium Compound, N.O.S (barium Carbonate)	6.1	1564	III	Toxic
---	-----	------	-----	-------

IMDG

Barium Compound, N.O.S (barium Carbonate)	6.1	1564	III	Toxic
---	-----	------	-----	-------

IATA-DGR

Barium Compound, N.O.S (barium Carbonate)	6.1	1564	III	Toxic
---	-----	------	-----	-------

U.S. DOT

Shipping Name:	Class	UN/NA	PG	Label(s)	M P	ERG	STCC
Barium Compound, N.O.S (barium Carbonate)	6.1	1564	III	Toxic	No	154	28-126-13

PG- Packing Group M P- Marine Pollutant ERG -Emergency info

SECTION 15- REGULATORY INFORMATION

CANADA:

Inventory Information:

Canadian Domestic Substances List (DSL): All of the components of this product are listed on the Canadian Domestic Substances List.
Canadian Non-Domestic Substances List (NDSL): N/A

WHMIS Classification and labeling:

- D1B Toxic Material Causing Immediate and Serious Toxic Effects



This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR

Canadian Ingredient Disclosure List

CAS# 513-77-9 is listed on the Canadian Ingredient Disclosure List.

US Federal, States Regulations:

TSCA 8(b) inventory: Barium Carbonate

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A) ----- not regulated.

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required ----- not regulated.

US. EPA CERCLA Hazardous Substances (40 CFR 302) ----- not regulated.

HMIS (Hazardous Material Information System)

Health = 2 Fire = 0 Reactivity = 1 PPE: Supplied by User; dependent on local conditions

NFPA (National Fire Protection Association)

Health = 2 Flammability = 0 Instability = 1 Special =None

European Labeling in Accordance with EC Directives:

Annex I Index#: 056-003-00-2

Classification as in directive 67/548/EEC

Class of danger: Corrosive

R-Phrases--- R22: Harmful if swallowed.

Labelling as in directive 67/548/EEC

Symbol(s) and Indication(s) of Danger:  + Xn: Harmful

R-Phrases--- R22: Harmful if swallowed.

S-Phrases--- S2: Keep out of the reach of children. S24/25: Avoid contact with skin and eyes.

Classification and Labelling According to **GHS:**


International Chemical Identification: barium carbonate

Classification:

Hazard Class and Category Code(s): Acute Tox. 4 *

Hazard Statement Code(s): H302--- Harmful if swallowed

Labelling

Pictogram, Signal Word Code(s): GHS07  Wng

Hazard statement Code(s): H302--- Harmful if swallowed

SECTION 16- ADDITIONAL INFORMATION

Reference:

IUCLID Chemical Data Sheet (Barium Carbonate) – 18.FEB, 2000

MSDS Creation Date: | JAN.08, 2006

Revision Date: | JAN.08, 2013

The information above is believed to be accurate and represents the best information currently available to us. However, we (TANGSHAN HAOXUCHENG CHEMICAL TRADING CO, LTD) make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall we be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if we (TANGSHAN HAOXUCHENG CHEMICAL TRADING CO, LTD) has been advised of the possibility of such damages.

MATERIAL SAFETY DATA SHEET OF BARIUM CARBONATE

TANGSHAN HAOXUCHENG CHEMICAL TRADING CO., LTD.

Address: No.118-8, Xinhua West RD. Room33, No 15 BLDG Tangshan Hebei Prov. P R China 063000

24 Hour Emergency Call: ++863155269898 Fax: ++863155267279

Material Safety Data Sheet**ACCUFLO™/MC TK 68**

000003001164



Version 3.0

Revision Date 2015/11/16

Print Date 2015/11/16

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : ACCUFLO™/MC TK 68

Product code : ACFLK68P20, ACFLK68DRM, ACFLK68DCT, ACFLK68, ACFLK68BLK

Manufacturer or supplier's details
 Petro-Canada Lubricants Inc.
 2310 Lakeshore Road West
 Mississauga ON L5J 1K2
 Canada

Emergency telephone number : Suncor Energy: +1 403-296-3000;
 Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : These products are premium quality slideway lubricants typically used on all types of machine tools and are designed to provide maximum accuracy in table movements.

Prepared by : Product Safety: +1 905-804-4752

SECTION 2. HAZARDS IDENTIFICATION**Emergency Overview**

Appearance	liquid
Colour	light brown
Odour	Mild petroleum oil like.

Potential Health Effects

Primary Routes of Entry : Eye contact
 Ingestion
 Inhalation
 Skin contact

Aggravated Medical Condition : None known.

Carcinogenicity:

IARC : No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH : No component of this product present at levels greater than or

Material Safety Data Sheet

ACCUFLO^{TM/MC} TK 68

000003001164



Version 3.0

Revision Date 2015/11/16

Print Date 2015/11/16

equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

No hazardous ingredients

SECTION 4. FIRST AID MEASURES

- If inhaled : Move to fresh air.
Artificial respiration and/or oxygen may be necessary.
Seek medical advice.
- In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash skin thoroughly with soap and water or use recognized skin cleanser.
Wash clothing before reuse.
Seek medical advice.
- In case of eye contact : Remove contact lenses.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Obtain medical attention.
- If swallowed : Rinse mouth with water.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Never give anything by mouth to an unconscious person.
Seek medical advice.
- Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : No information available.
- Specific hazards during : Cool closed containers exposed to fire with water spray.

Material Safety Data Sheet

ACCUFLO^{TM/MC} TK 68

000003001164



Version 3.0

Revision Date 2015/11/16

Print Date 2015/11/16

firefighting

Hazardous combustion products : Carbon oxides (CO, CO₂), nitrogen oxides (NO_x), sulphur oxides (SO_x), sulphur compounds (H₂S), smoke and irritating vapours as products of incomplete combustion.

Further information : Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Material can create slippery conditions.

Environmental precautions : If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and cleaning up : Prevent further leakage or spillage if safe to do so.
Remove all sources of ignition.
Soak up with inert absorbent material.
Non-sparking tools should be used.
Ensure adequate ventilation.
Contact the proper local authorities.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling : For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid contact with skin, eyes and clothing.
Do not ingest.
Keep away from heat and sources of ignition.
Keep container closed when not in use.

Conditions for safe storage : Store in original container.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep in a dry, cool and well-ventilated place.
Keep in properly labelled containers.
To maintain product quality, do not store in heat or direct sunlight.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures : No special ventilation requirements. Good general ventilation

Material Safety Data Sheet

ACCUFLO ^{TM/MC} **TK 68**

000003001164



Version 3.0

Revision Date 2015/11/16

Print Date 2015/11/16

should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

- Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Filter type : organic vapour filter
- Hand protection
Material : neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R).
- Remarks : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Eye protection : Wear face-shield and protective suit for abnormal processing problems.
- Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
- Protective measures : Wash hands and face before breaks and immediately after handling the product.
Wash contaminated clothing before re-use.
Ensure that eyewash station and safety shower are proximal to the work-station location.
- Hygiene measures : Remove and wash contaminated clothing and gloves, including the inside, before re-use.
Wash face, hands and any exposed skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : liquid
- Colour : light brown
- Odour : Mild petroleum oil like.
- Odour Threshold : No data available
- pH : No data available
- Pour point : -33 °C (-27 °F)
- Boiling point/boiling range : No data available
- Flash point : 225 °C (437 °F)
Method: Cleveland open cup

Material Safety Data Sheet

ACCUFLO^{TM/MC} TK 68

00003001164



Version 3.0

Revision Date 2015/11/16

Print Date 2015/11/16

Fire Point	: No data available
Auto-Ignition Temperature	: No data available
Evaporation rate	: No data available
Flammability	: Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available
Density	: 0.8739 kg/l (15 °C / 59 °F)
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: 71.2 cSt (40 °C / 104 °F)
	9.94 cSt (100 °C / 212 °F)
Explosive properties	: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	: No data available
Incompatible materials	: Reactive with oxidising agents, acids, alkalis and reducing agents.
Hazardous decomposition products	: May release COx, NOx, SOx, H2S, methacrylate monomers, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	: Eye contact Ingestion Inhalation Skin contact
--	--

Material Safety Data Sheet

ACCUFLO ^{TM/MC} **TK 68**

000003001164



Version 3.0

Revision Date 2015/11/16

Print Date 2015/11/16

Acute toxicity

Product:

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

Skin corrosion/irritation

Product:

Remarks: No data available

Serious eye damage/eye irritation

Product:

Remarks: No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Aspiration toxicity

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae : Remarks: No data available

Material Safety Data Sheet

ACCUFLO™/MC TK 68

000003001164



Version 3.0

Revision Date 2015/11/16

Print Date 2015/11/16

Toxicity to bacteria : Remarks: No data available

Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Offer surplus and non-recyclable solutions to a licensed disposal company.
Waste must be classified and labelled prior to recycling or disposal.
Send to a licensed waste management company.
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulation

IATA-DGR

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

49 CFR

Not regulated as a dangerous good

TDG

Not regulated as a dangerous good

Special precautions for user

Not applicable

Material Safety Data Sheet

ACCUFLO^{TM/MC} TK 68

000003001164



Version 3.0

Revision Date 2015/11/16

Print Date 2015/11/16

SECTION 15. REGULATORY INFORMATION

WHMIS Classification : Not Rated

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

The components of this product are reported in the following inventories:

DSL	On the inventory, or in compliance with the inventory
TSCA	All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.
IECSC	On the inventory, or in compliance with the inventory
EINECS	On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

For Copy of (M)SDS : The Canadian Controlled Products Regulations (CPR) (Under the Hazardous Products Act, part of the WHMIS legislation) only apply to WHMIS Controlled (i.e., hazardous) products. Therefore, the CPR and the 3-year update rule specified therein do not apply to WHMIS Non-Controlled products. Although this is true, customarily Petro-Canada reviews and updates Non-Controlled product MSDS if a customer requests such an update. These Non-Controlled product updates are given a lower priority than Controlled products but are handled as soon as practicable. If you would like to verify if the MSDS you have is the most current, or you require any further information, please contact:
Internet: lubricants.petro-canada.ca/msds
Western Canada, telephone: 1-800-661-1199; fax: 1-800-378-4518
Ontario & Central Canada, telephone: 1-800-268-5850; fax: 1-800-201-6285
Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 1-800-201-6285
For Product Safety Information: 1 905-804-4752

Prepared by : Product Safety: +1 905-804-4752

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

NONE.

Speedway International Inc.
40 Nicolas Avenue
Winnipeg, Manitoba R2J 0T5

MATERIAL SAFETY DATA SHEET

In case of Emergency contact: Speedway International Inc. (204)233-6263

PRODUCT NAME: **Blue Thunder Washer Fluid**

Effective date: Jan 1, 2011

1. INGREDIENTS: Methanol Cas# 67-56-1

Substances listed in the Ingredients Section are those identified as being at a concentration of 1% or greater, or 0.1% if the substance is on the list of potential carcinogens listed in OSFA Hazard Communication Standard. Where proprietary ingredient shows, the identity of this substance may be made available as provided in 29 CFR 1910.1200 (1)

2. Physical Data:

Boiling Point :	177 F
Vap Pressure :	Not Applicable
Vap Density :	Not applicable
Sol. In water :	Misc in all proportions
Sp. Gravity :	0.943 @20 C

Appearance : Clear light blue liquid

Odor : Slightly Alcoholic

3. Fire and Explosion Data:

Flash Point : 82 F

method Used : tcc (astm O-56-70)

Flammable Limits:

Upper Flame Limit : 36.5%

Lower Flame Limit : 6.0%

4. Extinguishing Media: Water, fog, foam, alcohol foam, co2, dry chemical

5. Fire Fighting Equipment : Positive pressure self contained breathing apparatus in any enclosed space

6. Reactivity Data:

Stable and will not polymerize

7. Environmental and Disposal Information :

Action to take for spills/leaks : Sweep up and discard.

Disposal Method : Handle in accordance with all Federal State and local Regulations.

8. Health Hazard Data:

Eye: If this product comes in contact with the eyes, flush with large amounts of water for at least 15 minutes and seek medical attention.

Skin Contact : If this product comes in contact with the skin, wash with large amounts of water. Seek medical attention if irritation persists.

Ingestion : If this product is ingested, induce vomiting if the victim is conscious. Seek immediate medical advice and/or attention.

Inhalation : If breathing difficulties, dizziness, or lightheadedness occurs when working in areas with high vapor concentrations, victim should seek air free of vapors. If victim experiences continued breathing difficulties, administer oxygen until medical assistance can be rendered. If breathing stops, begin artificial respiration and seek immediate medical attention.

9. Handling Precautions :

Exposure guidelines : none established

Ventilation : Good general ventilation.

Respiratory : No protection should be needed.

Skin protection : The use of impermeable gloves is recommended on sensitive individuals.

Eye Protection : Safety glasses are recommended to safe guard against potential eye contact.

WHMIS (Classification)

Class B-2: Flammable liquid with a flash point lower than 37.8 C (100 F)

Class D-1B: Material causing immediate and serious toxic effects (Toxic)

Class D-2A: Material causing other toxic effects (very toxic)

Class D-2B: Material causing other toxic effects (very toxic)



Material Safety Data Sheet - MSDS

Section 1. Chemical Product and Company Identification

SS Wire

Product name	Classification	Classification
Blueshield	CSA:	AWS:
640-308L;	ER308L;	ER308L;
640-308HISil;	ER308LSi;	ER308LSi;
640-309L;	ER309L;	ER309L;
640-309LHISil;	ER309LSi;	ER309LSi;
640-316L;	ER316L;	ER316L;
640-316LHISil;	ER316LSi;	ER316LSi;
Description	: GMAW Stainless Consumables	Generic Code : AL-T-013-0
<u>In case of emergency</u>	: 1-514-878-1667	Date of issue : 01/13/2014
Supplier	: Air Liquide Canada Inc., 1250, René-Lévesque Ouest, Suite 1700, Montréal, QC H3B 5E6	

Section 2. Hazards Identification

Physical state and Appearance : Solid.

Emergency overview : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.

WARNING!

ELECTRIC SHOCK can kill.

FUMES AND GASES can be dangerous to your health.

ARC RAYS can injure eyes and burn skin.

MAY BE HARMFUL IF INHALED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER.

Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Use only with adequate ventilation. Do not eat, drink or smoke when using this product. Avoid contact with eyes, skin and clothing. Keep container tightly closed. Use personal protective equipment as required. Wash thoroughly after handling.

Routes of entry : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

- Eyes** : Very hazardous by the following route of exposure: of eye contact (irritant). Inflammation of the eye is characterized by redness, watering and itching.
- Skin** : Hazardous by the following route of exposure: of skin contact (corrosive, irritant, sensitizer). Skin contact may produce burns. Skin inflammation is characterized by itching, scaling, reddening or, occasionally, blistering.
- Inhalation** : Hazardous by the following route of exposure: of inhalation (lung irritant).
- Ingestion** : Since the product (welding fumes) is a gas and that it is mostly probable that it will be inhaled more than ingested, please consider first to look at the preventive measures in case of inhalation.

Potential chronic health effects :

Carcinogenicity

Product/ingredient name	ACGIH	OSHA	IARC	NTP	EU
nickel	A5	-	2B	Reasonably anticipated to be a human carcinogen.	Carc. 2, H351
Crystalline silica respirable	A2	-	1	Known to be a human carcinogen.	Carc. 1A, H350

Mutagenic effects Not available.

Teratogenic effects: Not available.

Medical conditions aggravated by over-exposure : Pre-existing skin disorders and disorders involving any other target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

(* See Abbreviations (section 16).

Section 3. Composition, Information on Ingredients

Name	CAS #	% by weight	UN number
Iron	7439-89-6	45 - 80	Not available.
Chromium	7440-47-3	11 - 32	Not available.
Nickel	7440-02-0	4 - 37	Not available.
Molybdenum	7439-98-7	0.01 - 4	Not regulated.
Manganese	7439-96-5	0.5 - 2.5	Not available.
Crystalline silica respirable	14808-60-7	0.1 - 1	Not available.

The fumes emitted by the electrodes, in use, are hazardous. This MSDS is written for workers using these electrodes.

See Section 8 for Exposure Limits of the oxides found in the welding fumes.

Section 4. First Aid Measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Section 5. Fire Fighting Measures

- Flammability of the product** : Non-flammable. Emits toxic fumes when heated.
- Explosibility** : Non-explosive in the presence of the following materials or conditions: open flames, sparks and static discharge, heat and shocks and mechanical impacts.
- Fire-fighting media and instructions** : Use an extinguishing agent suitable for the surrounding fire.

Section 6. Accidental Release Measures

- Small/Large Spill and Leak** : Use appropriate tools to transfer the spilled solid to a convenient waste disposal container.

Section 7. Handling and Storage

- Handling** : Avoid contact with eyes. Avoid breathing dust. Avoid prolonged or repeated contact with skin. Do not get on skin or clothing. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.
- Storage** : All filler metals in their original, unopened containers should be kept in a relatively dry storage area at temperatures between 15°C (60°F) and 30°C (80°F) and 50% maximum relative humidity.

Section 8. Exposure Controls, Personal Protection

- Engineering controls** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

- Eyes** : Safety glasses with side shields. Face shield with radiation shielding.
- Body** : Full suit. Fire resistant.
- Respiratory** : Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear a canister breathing apparatus (respirator) or a supplied-air respirator, when required, to weld in a confined space or when room exhaust or ventilation does not keep exposure below the acceptable values.
- Hands** : Gloves. Fire resistant.
- Feet** : Metal cap, safety boots.

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			Notations
Ingredient	List name	ppm	mg/m ³	Other	ppm	mg/m ³	Other	ppm	mg/m ³	Other	
Chromium, measured as Cr	US ACGIH 6/2013	-	0.5	-	-	-	-	-	-	-	[a]
Chromium, as Cr	AB 4/2009	-	0.5	-	-	-	-	-	-	-	[3]
Chromium	BC 7/2013	-	0.5	-	-	-	-	-	-	-	
Chromium, as Cr	ON 1/2013	-	0.5	-	-	-	-	-	-	-	[a]
Chromium	QC 12/2012	-	0.5	-	-	-	-	-	-	-	
Nickel	US ACGIH 6/2013	-	1.5	-	-	-	-	-	-	-	[b]
Nickel, as Ni	AB 4/2009	-	1.5	-	-	-	-	-	-	-	
Nickel	BC 7/2013	-	0.05	-	-	-	-	-	-	-	
Nickel	ON 1/2013	-	1	-	-	-	-	-	-	-	[c]
Nickel	QC 12/2012	-	1	-	-	-	-	-	-	-	
Molybdenum, as Mo	US ACGIH 6/2013	-	10	-	-	-	-	-	-	-	[b]
Molybdenum, as Mo	US ACGIH 6/2013	-	3	-	-	-	-	-	-	-	[d]
Molybdenum, as Mo	AB 4/2009	-	3	-	-	-	-	-	-	-	[e]
Molybdenum	BC 7/2013	-	10	-	-	-	-	-	-	-	[f]
Molybdenum	BC 7/2013	-	3	-	-	-	-	-	-	-	[e]
Molybdenum, as Mo	ON 1/2013	-	10	-	-	-	-	-	-	-	[b]
Molybdenum, as Mo	ON 1/2013	-	3	-	-	-	-	-	-	-	[d]
Manganese, as Mn	US ACGIH 6/2013	-	0.1	-	-	-	-	-	-	-	[b]
Manganese, as Mn	US ACGIH 6/2013	-	0.2	-	-	-	-	-	-	-	[d]
Manganese, as Mn	AB 4/2009	-	0.2	-	-	-	-	-	-	-	
Manganese, as Mn	BC 7/2013	-	0.2	-	-	-	-	-	-	-	
Manganese, as Mn	ON 1/2013	-	0.2	-	-	-	-	-	-	-	
Manganese, as Mn	QC 12/2012	-	1	-	-	3	-	-	-	-	[g]
Crystalline silica respirable	US ACGIH 6/2013	-	0.025	-	-	-	-	-	-	-	[d]
Crystalline silica respirable	AB 4/2009	-	0.025	-	-	-	-	-	-	-	[h]
Crystalline silica respirable	BC 7/2013	-	0.025	-	-	-	-	-	-	-	[e]
Crystalline silica respirable	ON 1/2013	-	0.1	-	-	-	-	-	-	-	[i]

Iron	QC 12/2012 US ACGIH	-	0.1 10	-	-	-	-	-	-	-	-	iii [k]
------	------------------------	---	-----------	---	---	---	---	---	---	---	---	------------

[3]Skin sensitization

Form: [a]Inorganic [b]Inhalable fraction [c]Inhalable fraction: means that size fraction of the airborne particulate deposited anywhere in the respiratory tract and collected during air sampling with a particle size-selective device that, (a) meets the ACGIH particle size-selective sampling criteria for airborne particulate matter; and (b) has the cut point of 100 µm at 50 per cent collection efficiency. [d]Respirable fraction [e]Respirable [f]Inhalable [g]fume [h]Respirable particulate [i]Respirable fraction: means that size fraction of the airborne particulate deposited in the gas-exchange region of the respiratory tract and collected during air sampling with a particle size-selective device that, (a) meets the ACGIH particle size-selective sampling criteria for airborne particulate matter; and (b) has the cut point of 4 µm at 50 per cent collection efficiency. [j]Respirable dust. [k]Inhalable particle.

Section 9. Physical and Chemical Properties

Physical state and Appearance : Solid.
 Color : Gray.
 Odor : Odorless.
 Melting/freezing point : 1500°C (2732°F)
 Specific gravity : Weighted average: 6.72 [Water = 1]
 Solubility : Insoluble in the following materials: cold water and hot water.

Section 10. Stability and Reactivity

Stability and reactivity : The product is stable.
 Hazardous decomposition products : Metallic oxides. carbon oxides (CO, CO₂) Arc radiation can support the production of ozone and nitrogen oxides.
 Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological Information

Product/ingredient name	Result	Species	Dose	Exposure
Manganese	LD50 Oral	Rat	9 g/kg	-

Chronic effects and other toxic effects on humans : **CARCINOGENIC EFFECTS:** Classified A4 (Not classifiable for humans or animals.) by ACGIH, 3 (Not classifiable for humans.) by IARC [Chromium]. Classified + (Proven.) by NIOSH [Nickel]. Classified 2B (Possible for humans.) by IARC, 3 (Possible for humans.) by European Union [Nickel]. Classified 2 (Reasonably anticipated to be human carcinogens.) by NTP [Nickel]. Classified A5 (Not suspected for humans.) by ACGIH [Nickel]. Classified A4 (Not classifiable for humans or animals.) by ACGIH [Manganese]. Classified 1 (Proven for humans.) by IARC, 1 (Known to be human carcinogens.) by NTP, + (Proven.) by NIOSH, 1 (Proven for humans.) by European Union [Crystalline silica respirable]. Classified A2 (Suspected for humans.) by ACGIH [Crystalline silica respirable].
 Contains material which may cause damage to the following organs: blood, kidneys, lungs, the nervous system, liver, upper respiratory tract, skin, eyes, central nervous system (CNS), nose/sinuses.

Very hazardous by the following route of exposure: of eye contact (irritant).
 Hazardous by the following route of exposure: of skin contact (corrosive, irritant, sensitizer), of inhalation (lung irritant).

Section 12. Ecological Information

Ecotoxicity data

Product/ingredient name	Result	Species	Exposure
Iron	Acute EC50 3700 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 33000 to 100000 µg/l Marine water	Crustaceans - Crangon crangon	48 hours
	Acute LC50 6.48 µg/l Marine water	Fish - Periphthalmus waltoni - Adult	96 hours
Chromium	Chronic NOEC 100 mg/l Marine water	Algae - Glenodinium halli	72 hours
	Acute EC50 0.2 ppm Marine water	Algae - Bacillariophyta	72 hours
	Acute EC50 5 ppm Marine water	Algae - Macrocyctis pyrifera - Young	4 days
	Acute EC50 35000 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 45 µg/l Fresh water	Crustaceans - Ceriodaphnia reticulata	48 hours
	Acute LC50 22 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
Nickel	Acute LC50 13.9 ppm Fresh water	Fish - Anguilla rostrata	96 hours
	Chronic NOEC 50 mg/l Marine water	Algae - Glenodinium halli	72 hours
	Chronic NOEC 0.19 µg/l Fresh water	Fish - Cyprinus carpio	4 weeks
	Acute EC50 2 ppm Marine water	Algae - Macrocyctis pyrifera - Young	4 days
	Acute EC50 450 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute EC50 1000 µg/l Marine water	Daphnia - Daphnia magna	48 hours
	Acute LC50 0.31 mg/l Marine water	Crustaceans - Americamysis bahia - Juvenile (Fledgling, Hatchling, Weanling)	48 hours
Molybdenum	Acute LC50 47.5 ng/L Fresh water	Fish - Heteropneustes fossilis	96 hours
	Chronic NOEC 100 mg/l Marine water	Algae - Glenodinium halli	72 hours
	Chronic NOEC 3.5 µg/l Fresh water	Fish - Cyprinus carpio	4 weeks
	Acute LC50 200000 µg/l	Daphnia - Daphnia magna	48 hours
Manganese	Acute LC50 800 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
	Chronic NOEC 500 mg/l Marine water	Algae - Glenodinium halli	72 hours
	Acute EC50 31000 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 29000 µg/l	Daphnia - Daphnia magna	48 hours
	Acute LC50 28 mg/l Fresh water	Fish - Pimephales promelas	96 hours

Products of degradation : Not applicable.

Section 13. Disposal Considerations

Waste information : Waste must be disposed of in accordance with federal, state and local environmental control regulations. Recycle, if possible.
Consult your local or regional authorities.

Section 14. Transport Information

No transport class is found applicable to this product.

Section 15. Regulatory Information

HCS Classification : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Irritating material
Sensitizing material
Carcinogen
Target organ effects

U.S. Federal regulations : TSCA 8(a) CDR Exempt/Partial exemption: Not determined
United States inventory (TSCA 8b): All components are listed or exempted.
SARA 302/304: No products were found.
SARA 311/312 Hazards identification: Immediate (acute) health hazard, Delayed (chronic) health hazard
Clean Water Act (CWA) 307: Chromium; Nickel

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Chromium	7440-47-3	11 - 32
	Nickel	7440-02-0	4 - 37
	Manganese	7439-96-5	0.5 - 2.5
Supplier notification	Chromium	7440-47-3	11 - 32
	Nickel	7440-02-0	4 - 37
	Manganese	7439-96-5	0.5 - 2.5

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations : Massachusetts : The following components are listed: CHROMIUM; NICKEL; MOLYBDENUM; MANGANESE
New York : The following components are listed: Chromium; Nickel
New Jersey : The following components are listed: CHROMIUM; NICKEL; MOLYBDENUM; MANGANESE; SILICA, QUARTZ; QUARTZ (SiO2)
Pennsylvania : The following components are listed: CHROMIUM; NICKEL; MOLYBDENUM; MANGANESE; QUARTZ (SiO2)
WARNING: This product contains a chemical known to the State of California to cause cancer.

WHMIS (Canada) : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).
CEPA Toxic substances: None of the components are listed.
Canadian ARET: None of the components are listed.
Canadian NPRI: The following components are listed: Chromium (and its compounds); Nickel (and its compounds); Manganese (and its compounds)
Alberta Designated Substances: None of the components are listed.
Ontario Designated Substances: None of the components are listed.
Quebec Designated Substances: None of the components are listed.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Section 16. Other Information

Label requirements : See Section 2.

Hazardous Material Information System (U.S.A.) : Health: 2* Fire: 0 Reactivity: 0

National Fire Protection Association (U.S.A.) : Health: 2 Fire: 0 Reactivity: 0 Other: None

References : - 29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. - CRC Handbook of chemistry and physics, 67th edition. CRC Press inc., Boca Raton, Florida. - Manufacturer's Material Safety Data Sheet. ANSI Z400.1, MSDS Standard, 2004. ANSI Z49.1 Safety in Welding and Cutting, The American Welding Society, P.O. Box 351040, Miami, FL 33135. Canadian Standard Association, CSA W117.2, Code for Safety in Welding and Cutting, 2003.

Abbreviations and acronyms : ACGIH: American Conference of Governmental Industrial Hygiene.
ACGIH-A1-Confirmed Human Carcinogen.
ACGIH-A2-Suspected Human Carcinogen.
ACGIH-A3-Animal Carcinogen.
ACGIH-A4-Not Classifiable as a Human Carcinogen.
ACGIH-A5-Not suspected as a Human Carcinogen.
IARC: International Agency for Research on Cancer.
IARC 1: Proven.
IARC 2A: Probable for human.
IARC 2B: Possible for human.
IARC 3: Not classifiable for human.
NIOSH: National Institute of Occupational Safety and Health.
NIOSH +: Proven.
NIOSH: None.
EU: European Union
Carc. 1A : May cause cancer (Known)
Carc. 1B : May cause cancer (Presumed)
Carc. 2 : Suspected of causing cancer
NTP: National Toxicology program.
NTP 1: Known to be human carcinogens.
NTP 2: Reasonably Anticipated to be human carcinogens.

Responsible name : IHS
Date of previous issue : 01/15/2011
Version : 5

Notice to reader

THE INFORMATION, RECOMMENDATIONS AND DATA CONTAINED IN THIS DOCUMENT ARE INTENDED TO BE USED BY PROPERLY TRAINED AND QUALIFIED PERSONNEL ONLY AND AT THEIR SOLE RISKS AND DISCRETION. THE INFORMATION, RECOMMENDATIONS AND DATA HEREIN CONTAINED ARE DERIVED FROM SOURCES WHICH WE BELIEVE TO BE RELIABLE. HOWEVER, AIR LIQUIDE CANADA INC. MAKES NO REPRESENTATION AND GIVES NO WARRANTY OF ANY KIND WHATSOEVER WITH RESPECT TO THEIR ACCURACY OR COMPLETENESS AND ASSUMES NO LIABILITY FOR DAMAGES OR LOSS ARISING DIRECTLY OR INDIRECTLY FROM THEIR USE, WHETHER PROPER OR IMPROPER.

SECTION I - PRODUCT IDENTIFICATION AND USE		
PRODUCT NAME: TCI 1211 H.D. PRODUCT USE: MULTI-METALHOTAQUEOUS ALKALI SOAK TANK COMPOUND (POWDER)		
EMERGENCYPHONE #: (519) 454-4370 MANUFACTURER'S NAME AND ADDRESS: TETRA-CHEM INDUSTRIES LTD. 71 JOHN ST. E., BRIGHTON CANOJ 1B0 PHONE # (519) 454-4370 - FAX # (519) 454-4362 SUPPLIER'S NAME: SAME		
SECTION II - HAZARDOUS INGREDIENTS		
HAZARDOUS INGREDIENTS	CAS NUMBER	% BYWEIGHT
a) SODIUM CARBONATE	497-19-8	10-30
b) SODIUM METASILICATE	6834-92-0	10-30
(SPECIES - ROUTE) LD ₅₀		LC ₅₀
a) (RAT-oral): 2.8 g/kg		N.A.V.
b) (RAT-oral): 0.6 g/kg		N.A.V.
SECTION III - PHYSICAL DATA		
PHYSICAL STATE:	SOLID <input checked="" type="checkbox"/>	LIQUID <input type="checkbox"/> GAS <input type="checkbox"/>
ODOR AND APPEARANCE: DETERGENT ODOR, OFF-WHITE POWDER DENSITY(g/ml): N.A.V. BOILING POINT: N.A.V. FREEZING POINT: N.A.P. pH: BASIC % VOLATILE: N.A.V. SPECIFIC GRAVITY(WATER=1): 2.53 @ 20 °C ODOR THRESHOLD: N.A.V. VAPOR PRESSURE: N.A.V. VAPOR DENSITY(AIR=1): N.A.V. OIL/ WATER DISTRIBUTION COEFFICIENT: N.A.V. SOLUBILITY IN WATER: COMPLETE IN WATER EVAPORATION RATE (n-BUTYLACETATE=1): N.A.V.		
SECTION IV - FIRE AND EXPLOSION HAZARD		
FLAMMABILITY:	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>
UNDER WHAT CONDITIONS: TDG FLAMMABILITY CLASSIFICATION: N.A.P. AUTO-IGNITION TEMPERATURE: N.A.P. FLASH POINT: N.A.P. METHOD USED: FLAMMABLE LIMITS: LEL(% BY VOLUME): UEL(% BY VOLUME): MEANS OF EXTINCTION: WATER <input type="checkbox"/> CO ₂ <input type="checkbox"/> DRY CHEMICAL <input type="checkbox"/> OTHER <input type="checkbox"/> UNUSUAL FIRE AND EXPLOSION HAZARDS / REMARKS: USE AN APPROPRIATE MEAN OF EXTINCTION FOR SURROUNDING FIRE EXPLOSION DATA- SENSITIVITY TO MECHANICAL IMPACT: NONE SENSITIVITY TO STATIC DISCHARGE: NONE		
SECTION V - REACTIVITY DATA		
STABILITY: UNSTABLE <input type="checkbox"/>	STABLE <input checked="" type="checkbox"/>	
INCOMPATIBILITY TO OTHER SUBSTANCES: METALS, ACIDS		
CONDITIONS OF REACTIVITY: CONTACT, MIXING		
HAZARDOUS DECOMPOSITION PRODUCTS:		

SECTION VI - TOXICOLOGICAL PROPERTIES		
WHMIS: MATERIALS CAUSING OTHER TOXIC EFFECTS (D2) POTENTIAL HEALTH HAZARDS: ROUTES OF ENTRY: SKIN (ABSORPTION): NO (CONTACT): YES INGESTION: YES INHALATION (ACUTE): YES (CHRONIC): YES EYE: YES		
INGREDIENT	ACGIH TLV	OSHA PEL
a.	10 mg/m ³ (TWA)	15 mg/m ³
b.	N.A.V.	N.A.V.
EFFECTS OF ACUTE EXPOSURE TO PRODUCT: EYE CONTACT: CORROSIVE SKIN CONTACT: IRRITATING INHALATION OF DUST: ACUTE: IRRITATING, CHRONIC: N.A.V. INGESTION: IRRITATING TO GASTROINTESTINAL LINING AND WALL. CARCINOGENICITY, REPRODUCTIVE EFFECTS, TERATOGENICITY, MUTAGENICITY: NO REPORTED EFFECTS ON HUMANS UNDER NORMAL CONDITIONS OF USE. TARGET ORGANS: N.A.V. MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: N.A.V. EFFECTS OF CHRONIC EXPOSURE TO PRODUCT: PROLONGED OR REPEATED CONTACT WITH SKIN CAN CAUSE DEFATTING AND DRYING OF THE SKIN RESULTING IN SKIN IRRITATION, RASH, BURNS AND DERMATITIS. SENSITIZATION TO PRODUCT: N.A.V. SYNERGISTIC PRODUCTS: N.A.V.		
SECTION VII - PREVENTIVE MEASURES		
RESPIRATORY PROTECTION AND TYPE: NOT REQUIRED UNDER NORMAL NON-DUSTING CONDITIONS. NIOSH APPROVED RESPIRATOR FOR DUST PARTICLES. ENGINEERING CONTROLS: NORMAL VENTILATION UNDER NORMAL CONDITIONS. PROTECTIVE GLOVES: NEOPRENE. EYE PROTECTION: FACE SHIELD FOOT WEAR: SAFETY SHOES OTHER SPECIFIC CLOTHING OR EQUIPMENT REQUIRED: EYE BATH STATION LEAK AND SPILL PROCEDURE: FLUSH WITH WATER INTO SANITARY SEWER. FOR LARGE SPILLS, SCOOP INTO DOT APPROVED CONTAINERS. WASTE DISPOSAL: THE CLEANING PROCESS MAY GENERATE A HAZARDOUS INDUSTRIAL WASTE. COMPLY WITH CANADIAN MINISTRY OF THE ENVIRONMENT & ENERGY REGULATION 347 AND LOCAL MUNICIPAL BY-LAWS. COMPLY WITH USA EPA'S FEDERAL, STATE & LOCAL REGULATIONS. TETRA-CHEM INDUSTRIES LTD. IS LICENSED BY THE MOEE FOR WASTE MANAGEMENT ONTARIO CERTIFICATE OF APPROVAL # A800506. HANDLING PROCEDURES AND EQUIPMENT: HYGROSCOPIC, USE PLASTIC STORAGE REQUIREMENTS: DRY IN DOOR STORAGE SPECIAL SHIPPING INFORMATION: TRANSPORTATION OF DANGEROUS GOODS (EXEMPT)		
SECTION VIII - FIRST AID MEASURES		
EYE CONTACT: FLUSH EYES WITH WATER FOR 20 MINUTES TURN BACK EYE LIDS. IF IRRITATION PERSISTS, GET MEDICAL ATTENTION. INHALATION: MOVE PATIENT TO FRESH AIR. IF BREATHING HAS STOPPED, OR IS LABORED, GIVE OXYGEN OR ARTIFICIAL RESPIRATION. GET MEDICAL ATTENTION. SKIN CONTACT: REMOVE CONTAMINATED CLOTHING. FLUSH AREA WITH FRESH WATER FOR 15 MINUTES. IF IRRITATION PERSISTS, GET MEDICAL ATTENTION. INGESTION: DO NOT INDUCE VOMITING. ONLY IF CONSCIOUS, RINSE MOUTH WITH WATER. GIVE LARGE AMOUNTS OF MILK OR WATER. CAUTION SHOULD BE GIVEN TO ASPIRATION OF FLUID INTO LUNGS PRODUCING CHEMICAL PNEUMONITIS. KEEP PATIENT CALM. CALL PHYSICIAN IMMEDIATELY.		
SECTION IX - PREPARATION DATA		
PREPARED BY: HEALTH AND SAFETY COMMITTEE		DATE: 06 JAN 2011
CONTACT: ALSTRUTHMANN (Hon. BSc.)		TEL: (519) 454-4370
CANADA & USA TOLL FREE 1-888-658-5515		FAX: (519) 454-4362

NOTE: N. AP. = NOT APPLICABLE N. AV. = NOT AVAILABLE

ADDITIONAL INFORMATION: THE INFORMATION IN THIS MSDS HAS BEEN OBTAINED FROM SOURCES BELIEVED TO BE RELIABLE. THE MANUFACTURER AND SUPPLIER PROVIDES NO WARRANTIES EXPRESS OR IMPLIED AND ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR THE COMPLETENESS OF THE DATA CONTAINED HEREIN. SEE DISCLAIMER ON PRODUCT LABEL.

M. S. D. S.

MATERIAL SAFETY DATA SHEET

SECTION I - PRODUCT IDENTIFICATION AND USE

PRODUCT NAME: TCI 1202 H.D.
PRODUCT USE: HOTCAUSTIC FERROUS METAL
 SPRAYCLEANER (POWDER)

EMERGENCYPHONE #: (519) 454-4370

MANUFACTURER'S NAME AND ADDRESS:

TETRA-CHEM INDUSTRIES LTD.

71 JOHN ST. E., BRIGHTON CANOJ 1B0

PHONE # (519) 454-4370 - FAX # (519) 454-4362

SUPPLIER'S NAME: SAME

SECTION II - HAZARDOUS INGREDIENTS

HAZARDOUS INGREDIENTS	CAS NUMBER	% BYWEIGHT
a) SODIUM HYDROXIDE	1310-73-2	60-100
b) SODIUM CARBONATE	497-19-8	1-5
c) SODIUM METASILICATE	6834-92-0	1-5

(SPECIES - ROUTE)	LD ₅₀	LC ₅₀
a)	N.A.V.	N.A.V.
b)	(RAT-oral): 2.8 g/kg	N.A.V.
c)	(RAT-oral): 0.6 g/kg	N.A.V.

SECTION III - PHYSICAL DATA

PHYSICAL STATE: SOLID LIQUID GAS

ODOR AND APPEARANCE: DETERGENT ODOR, OFF-WHITE POWDER

DENSITY(g/ml): 2.13

BOILING POINT: 1390 °C

FREEZING POINT: N.A.P.

pH: STRONG BASE (>13 @ 1% aqueous solution)

% VOLATILE: N.A.V.

SPECIFIC GRAVITY(WATER=1): 2.13 @ 20 °C

ODOR THRESHOLD: N.A.V.

VAPOR PRESSURE: N.A.V.

VAPOR DENSITY(AIR=1): N.A.V.

OIL/WATER DISTRIBUTION COEFFICIENT: N.A.V.

SOLUBILITY IN WATER: COMPLETE IN WATER

EVAPORATION RATE (n-BUTYLACETATE=1): N.A.V.

SECTION IV - FIRE AND EXPLOSION HAZARD

FLAMMABILITY: YES NO

UNDER WHAT CONDITIONS:

TDG FLAMMABILITY CLASSIFICATION: N.A.P.

AUTO-IGNITION TEMPERATURE: N.A.P.

FLASH POINT: N.A.P. METHOD USED:

FLAMMABLE LIMITS: LEL(% BY VOLUME):

UEL(% BY VOLUME):

MEANS OF EXTINCTION:

WATER CO₂ DRY CHEMICAL OTHER

UNUSUAL FIRE AND EXPLOSION HAZARDS / REMARKS:

USE AN APPROPRIATE MEAN OF EXTINCTION FOR SURROUNDING FIRE

EXPLOSION DATA- SENSITIVITY TO MECHANICAL IMPACT: NONE

SENSITIVITY TO STATIC DISCHARGE: NONE

SECTION V - REACTIVITY DATA

STABILITY: UNSTABLE STABLE

INCOMPATIBILITY TO OTHER SUBSTANCES: METALS, ACIDS AND HOT WATER

CONDITIONS OF REACTIVITY: CONTACT, MIXING

HAZARDOUS DECOMPOSITION PRODUCTS:

SECTION VI - TOXICOLOGICAL PROPERTIES

WHMIS: CORROSIVE MATERIAL(E)
 CAUSES OTHER TOXIC EFFECTS (D2)

POTENTIAL HEALTH HAZARDS

ROUTES OF ENTRY:

SKIN (ABSORPTION): NO (CONTACT): YES INGESTION: YES
 INHALATION (ACUTE): YES (CHRONIC): YES EYE: YES

INGREDIENT	ACGIH TLV	OSHA PEL
a.	2 mg/m ³ (TWA)	
b.	10 mg/m ³ (TWA)	15 mg/m ³
c.	N.A.V.	N.A.V.

EFFECTS OF ACUTE EXPOSURE TO PRODUCT:

EYE CONTACT: CORROSIVE SKIN CONTACT: CORROSIVE

INHALATION OF DUST: ACUTE: IRRITATING, CHRONIC: ULCERATION

INGESTION: CORROSIVE TO GASTROINTESTINAL LINING AND WALL.
 CARCINOGENICITY, REPRODUCTIVE EFFECTS, TERATOGENICITY, MUTAGENICITY:

NO REPORTED EFFECTS ON HUMANS UNDER NORMAL CONDITIONS OF USE.

TARGET ORGANS: N.A.V.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: N.A.V.

EFFECTS OF CHRONIC EXPOSURE TO PRODUCT: PROLONGED OR

REPEATED CONTACT WITH SKIN CAN CAUSE DEFATTING AND DRYING

OF THE SKIN RESULTING IN SKIN IRRITATION, RASH, BURNS AND

DERMATITIS.

SENSITIZATION TO PRODUCT: N.A.V.

SYNERGISTIC PRODUCTS: N.A.V.

SECTION VII - PREVENTIVE MEASURES

RESPIRATORY PROTECTION AND TYPE: NOT REQUIRED UNDER NORMAL NON-DUSTING
 CONDITIONS. NIOSH APPROVED RESPIRATOR FOR DUST PARTICLES.

ENGINEERING CONTROLS: NORMAL VENTILATION UNDER NORMAL CONDITIONS.

PROTECTIVE GLOVES: NEOPRENE.

EYE PROTECTION: FACE SHIELD FOOT WEAR: SAFETY SHOES

OTHER SPECIFIC CLOTHING OR EQUIPMENT REQUIRED: EYE BATH STATION

LEAK AND SPILL PROCEDURE: FLUSH WITH WATER INTO SANITARY SEWER. FOR LARGE

SPILLS, SCOOP INTO DOT APPROVED CONTAINERS.

WASTE DISPOSAL:

THE CLEANING PROCESS MAY GENERATE A HAZARDOUS INDUSTRIAL WASTE. COMPLY
 WITH CANADIAN MINISTRY OF THE ENVIRONMENT & ENERGY REGULATION 347 AND
 LOCAL MUNICIPAL BY-LAWS.

COMPLY WITH USA EPA'S FEDERAL, STATE & LOCAL REGULATIONS.

TETRA-CHEM INDUSTRIES LTD. IS LICENSED BY THE MOE FOR WASTE MANAGEMENT

ONTARIO CERTIFICATE OF APPROVAL # A800506.

HANDLING PROCEDURES AND EQUIPMENT: HYGROSCOPIC, USE PLASTIC

STORAGE REQUIREMENTS: DRY INDOOR STORAGE

SPECIAL SHIPPING INFORMATION: CORROSIVE SOLIDS, N.O.S.*

(Sodium hydroxide)

CLASS 8(9.2), UN 1759, PG II

SECTION VIII - FIRST AID MEASURES

EYE CONTACT: FLUSH EYES WITH WATER FOR 20 MINUTES TURN BACK EYE LIDS.
 IF IRRITATION PERSISTS, GET MEDICAL ATTENTION.

INHALATION: MOVE PATIENT TO FRESH AIR. IF BREATHING HAS STOPPED,
 OR IS LABORED, GIVE OXYGEN OR ARTIFICIAL RESPIRATION.
 GET MEDICAL ATTENTION.

SKIN CONTACT: REMOVE CONTAMINATED CLOTHING. FLUSH AREA WITH
 FRESH WATER FOR 15 MINUTES.
 IF IRRITATION PERSISTS, GET MEDICAL ATTENTION.

INGESTION: DO NOT INDUCE VOMITING. ONLY IF CONSCIOUS, RINSE
 MOUTH WITH WATER. GIVE LARGE AMOUNTS OF MILK OR WATER.
 CAUTION SHOULD BE GIVEN TO ASPIRATION OF FLUID INTO LUNGS
 PRODUCING CHEMICAL PNEUMONITIS. KEEP PATIENT CALM.
 CALL PHYSICIAN IMMEDIATELY.

SECTION IX - PREPARATION DATA

PREPARED BY: HEALTH AND SAFETY COMMITTEE DATE: 08 JAN 2011
 CONTACT: AL STRUTHMANN (Hon. B.Sc.) TEL: (519) 454-4370
 CANADA & USA TOLL FREE 1-888-658-5515 FAX: (519) 454-4362

NOTE: N. A. P. = NOT APPLICABLE

N. A. V. = NOT AVAILABLE

ADDITIONAL INFORMATION: THE INFORMATION IN THIS MSDS HAS BEEN OBTAINED FROM SOURCES BELIEVED TO BE RELIABLE.
 THE MANUFACTURER AND SUPPLIER PROVIDES NO WARRANTIES EXPRESS OR IMPLIED AND ASSUMES NO RESPONSIBILITY
 FOR THE ACCURACY OR THE COMPLETENESS OF THE DATA CONTAINED HEREIN. SEE DISCLAIMER ON PRODUCT LABEL.

1. Product and Company Identification

Product number 2051
 Material name **SWISH GLASS CLEANER**
 Revision date 10-01-2013
 Company information SWISH MAINTENANCE LIMITED
 PETERBOROUGH ON K9J8N4 CANADA, MEXICO
 Company phone
 Emergency telephone US 1-866-836-8855
 Emergency telephone outside US 1-952-852-4646
 Version # 03
 Supersedes date 08-01-2013
 Expiry Date 12-Jul-2016
 Product use Glass cleaner

2. Hazards Identification

Emergency overview CONTENTS UNDER PRESSURE.
 Aerosol. Pressurized container may explode when exposed to heat or flame. May be fatal if inhaled. Prolonged exposure may cause chronic effects.

Potential health effects
 Routes of exposure Inhalation. Ingestion. Skin contact. Eye contact.
 Eyes Contact with eyes may cause irritation. Health injuries are not known or expected under normal use.
 Skin May be harmful if absorbed through skin.
 Inhalation Intentional misuse by concentrating and inhaling the product can be harmful or fatal. Prolonged inhalation may be harmful.
 Ingestion Exposure by ingestion of an aerosol is unlikely. Components of the product may be absorbed into the body by ingestion.

Target organs Respiratory system.
 2-Butoxy ethanol may be absorbed through the skin in toxic amounts if contact is repeated and prolonged and may cause blood damage. These effects have not been observed in humans.

Chronic effects May be harmful if absorbed through skin. Pregnant women or women of child-bearing age should not be exposed to this product.

Potential environmental effects May cause long-term adverse effects in the environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Butane	106-97-8	1 - 5
Ethanol	64-17-5	1 - 5
Ethylene Glycol Monobutyl Ether	111-76-2	1 - 5
Propane	74-98-6	1 - 5
Other components below reportable levels		60 - 100

4. First Aid Measures

First aid procedures

Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. If a contact lens is present, DO NOT delay irrigation or attempt to remove the lens. Continue rinsing. Get medical attention if irritation develops and persists.
Skin contact	Remove and isolate contaminated clothing and shoes. Wash off with warm water and soap. Get medical attention if irritation develops and persists. For minor skin contact, avoid spreading material on unaffected skin.
Inhalation	Move to fresh air. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Get medical attention, if needed
Ingestion	In the unlikely event of swallowing contact a physician or poison control center. Rinse mouth thoroughly. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Notes to physician

In case of shortness of breath, give oxygen. Symptoms may be delayed.

General advice

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Get medical attention if symptoms occur. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation.

5. Fire Fighting Measures

Flammable properties

Heat may cause the containers to explode. Ruptured cylinders may rocket.

Extinguishing media

Suitable extinguishing media	Water.
------------------------------	--------

Protection of firefighters

Specific hazards arising from the chemical	Contents under pressure. Pressurized container may explode when exposed to heat or flame.
--	---

Protective equipment for firefighters	Firefighters should wear full protective clothing including self contained breathing apparatus. Structural firefighters protective clothing will only provide limited protection. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
---------------------------------------	---

Fire fighting equipment/instructions

Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Do not direct water at source of leak or safety devices; icing may occur. Cool containers with flooding quantities of water until well after fire is out. Do not direct water at source of leak or safety devices as icing may occur. Use water spray to cool unopened containers. Containers should be cooled with water to prevent vapor pressure build up. Some of these materials, if spilled, may evaporate leaving a flammable residue.

Specific methods

Cool containers exposed to flames with water until well after the fire is out.

Explosion data

Sensitivity to static discharge	Not available.
Sensitivity to mechanical impact	Not available.

6. Accidental Release Measures

Personal precautions

Consider initial downwind evacuation for at least 500 meters (1/3 mile). Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Ventilate closed spaces before entering. Keep out of low areas. Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks). Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. For personal protection, see section 8 of the MSDS.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not contaminate water.

Methods for containment

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak you can do so without risk. If possible, turn leaking containers so that gas escapes rather than liquid. Move the cylinder to a safe and open area if the leak is irreparable. Prevent entry into waterways, sewers, basements or confined areas. Prevent entry into waterways, sewer, basements or confined areas.

Methods for cleaning up

Ventilate the area. Should not be released into the environment. Stop the flow of material, if this is without risk. Isolate area until gas has dispersed. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Clean up in accordance with all applicable regulations. For waste disposal, see section 13 of the MSDS.

Other information

Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling

Do not handle or store near an open flame, heat or other sources of ignition. Pressurized container: Do not pierce or burn, even after use. Do not use if spray button is missing or defective. Do not spray on a naked flame or any other incandescent material. Do not smoke while using or until sprayed surface is thoroughly dry. Do not cut, weld, solder, drill, grind, or expose containers to heat, flame, sparks, or other sources of ignition. All equipment used when handling the product must be grounded. Do not re-use empty containers. Use only with adequate ventilation. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get this material in contact with skin. Avoid prolonged exposure. Wash thoroughly after handling.

Storage

Contents under pressure. Do not expose to heat or store at temperatures above 120°F/49°C as can may burst. Do not puncture, incinerate or crush. Do not handle or store near an open flame, heat or other sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. Store in a well-ventilated place. Keep in an area equipped with sprinklers. Store away from incompatible materials (see Section 10 of the MSDS). Level 1 Aerosol (NFPA 30B)

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH Biological Exposure Indices

Components	Type	Value
2-Butoxyethanol (CAS 111-76-2)	BEI	200 mg/g

US. ACGIH Threshold Limit Values

Components	Type	Value
Ethyl Alcohol (CAS 64-17-5)	STEL	1000 ppm
2-Butoxyethanol (CAS 111-76-2)	TWA	20 ppm

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value
Butane (CAS 106-97-8)	TWA	1000 ppm
Ethyl Alcohol (CAS 64-17-5)	TWA	1880 mg/m ³
2-Butoxyethanol (CAS 111-76-2)	TWA	1000 ppm 97 mg/m ³
Propane (CAS 74-98-6)	TWA	20 ppm 1000 ppm

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value
Butane (CAS 106-97-8)	STEL	750 ppm
	TWA	600 ppm
Ethyl Alcohol (CAS 64-17-5)	STEL	1000 ppm
2-Butoxyethanol (CAS 111-76-2)	TWA	20 ppm

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value
Butane (CAS 106-97-8)	TWA	800 ppm
Ethyl Alcohol (CAS 64-17-5)	STEL	1000 ppm
2-Butoxyethanol (CAS 111-76-2)	TWA	20 ppm

Components	Type	Value
Butane (CAS 106-97-8)	TWA	1900 mg/m3 800 ppm
Ethyl Alcohol (CAS 64-17-5)	TWA	1880 mg/m3 1000 ppm
2-Butoxyethanol (CAS 111-76-2)	TWA	97 mg/m3 20 ppm
Propane (CAS 74-98-6)	TWA	1800 mg/m3 1000 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Ethyl Alcohol (CAS 64-17-5)	PEL	1900 mg/m3 1000 ppm
2-Butoxyethanol (CAS 111-76-2)	PEL	240 mg/m3 50 ppm
Propane (CAS 74-98-6)	PEL	1800 mg/m3 1000 ppm

Engineering controls Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye / face protection Wear safety glasses with side shields (or goggles).

Skin protection Wear protective gloves.

Respiratory protection In case of insufficient ventilation wear suitable respiratory equipment. If permissible levels are exceeded use NIOSH mechanical filter / organic vapor cartridge or an air-supplied respirator.

9. Physical & Chemical Properties

Appearance	Clear.
Boiling point	212 °F (100 °C) estimated
Color	Colorless.
Flash point	-156.00 °F (-104.44 °C) Propellant estimated
Form	Aerosol.
Melting point/Freezing point	Not available.
Odor	Butyl
Odor threshold	Not available.
pH	9.5 - 10.5 estimated
Physical state	Gas.
Vapor pressure	70 - 90 psig @ 70F estimated
Solubility (water)	Not available.
Specific gravity	0.961 estimated estimated
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Other data	
Heat of combustion	3.17 kJ/g estimated

10. Chemical Stability & Reactivity Information

Chemical stability Risk of ignition.

Conditions to avoid Aerosol containers are unstable at temperatures above 49°C. Avoid temperatures exceeding the flash point.

Hazardous decomposition products Not available.

*Possibility of hazardous reactions Hazardous polymerization does not occur.

11. Toxicological Information

Toxicological data

Product	Species	Test Results
Glème Glass Cleaner (CAS Mixture)		
<i>Acute</i>		
<i>Dermal</i>		
LD50	Rabbit	13586.2803 mg/kg, estimated
	Rat	7571 mg/kg
<i>Inhalation</i>		
LC50	Mouse	40423.0625 mg/l, 2 Hours, estimated 24176.2793 mg/l, 7 Hours, estimated 1313.3534 mg/l, 4 Hours, estimated
	Rat	79173.25 mg/l, 15 Minutes, estimated 11122.5186 mg/l, 4 Hours, estimated 75 mg/l/4h
<i>Oral</i>		
LD50	Dog	185.2165 g/kg, estimated
	Guinea pig	33.9778 g/kg, estimated
	Mouse	41.445 g/kg, estimated
	Rabbit	11.051 g/kg, estimated
	Rat	203.2327 g/kg, estimated
<i>Other</i>		
LD50	Mouse	12069.3428 mg/kg, estimated
	Rabbit	9670.5117 mg/kg, estimated
	Rat	8031.8926 mg/kg, estimated
Components		
Species		
Test Results		
Butane (CAS 106-97-8)		
<i>Acute</i>		
<i>Inhalation</i>		
LC50	Mouse	680 mg/l, 2 Hours
	Rat	658 mg/l, 4 Hours
Ethanol (CAS 64-17-5)		
<i>Acute</i>		
<i>Inhalation</i>		
LC50	Mouse	39 mg/l, 4 Hours
	Rat	20000 mg/l, 10 Hours
<i>Oral</i>		
LD50	Dog	5.5 g/kg
	Guinea pig	5.6 g/kg
	Mouse	3450 mg/kg
	Rat	6.2 g/kg
<i>Other</i>		
LD50	Mouse	933 mg/kg
	Rat	1440 mg/kg

Components	Species	Test Results
Ethylene Glycol Monobutyl Ether (CAS 111-76-2)		
Acute		
<i>Dermal</i>		
LD50	Rabbit	400 mg/kg
<i>Inhalation</i>		
LC50	Mouse	700 mg/l, 7 Hours
	Rat	450 mg/l, 4 Hours
<i>Oral</i>		
LD50	Guinea pig	1.2 g/kg
	Mouse	1.2 g/kg
	Rabbit	0.32 g/kg
	Rat	560 mg/kg
<i>Other</i>		
LD50	Mouse	1130 mg/kg
	Rabbit	280 mg/kg
	Rat	340 mg/kg
Propane (CAS 74-98-6)		
Acute		
<i>Inhalation</i>		
LC50	Rat	> 1442.847 mg/l, 15 Minutes 658 mg/l/4h

* Estimates for product may be based on additional component data not shown.

Acute effects	Acute LD50: 7571 mg/kg, Rat, Dermal
Chronic effects	Hazardous by WHMIS criteria. Prolonged inhalation may be harmful. May be harmful if absorbed through skin. 2-Butoxy ethanol may be absorbed through the skin in toxic amounts if contact is repeated and prolonged. These effects have not been observed in humans. Prolonged exposure may cause chronic effects.
Carcinogenicity	Hazardous by WHMIS criteria.
ACGIH Carcinogens	
Ethanol (CAS 64-17-5)	A3 Confirmed animal carcinogen with unknown relevance to humans.
Ethylene Glycol Monobutyl Ether (CAS 111-76-2)	A3 Confirmed animal carcinogen with unknown relevance to humans.
IARC Monographs. Overall Evaluation of Carcinogenicity	
Ethylene Glycol Monobutyl Ether (CAS 111-76-2)	3 Not classifiable as to carcinogenicity to humans.
Reproductive effects	Can cause adverse reproductive effects - such as birth defects, miscarriages, or infertility.
Teratogenicity	Not expected to be hazardous by WHMIS criteria.

12. Ecological Information

Ecotoxicological data

Product	Species	Test Results
Gleme Glass Cleaner (CAS Mixture)		
Algae	IC50	Algae 11902 mg/L, 72 Hours
Crustacea	EC50	Daphnia 26428 mg/L, 48 Hours
Fish	LC50	Fish 36327 mg/L, 96 Hours

Components	Species	Test Results
Ethanol (CAS 64-17-5)		
Crustacea	EC50	Daphnia
		11744.5 mg/L, 48 Hours
Aquatic		
Crustacea	EC50	Water flea (Daphnia magna)
		7.7 - 11.2 mg/l, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas)
		> 100 mg/l, 96 hours
Ethylene Glycol Monobutyl Ether (CAS 111-76-2)		
Aquatic		
Fish	LC50	Inland silverside (Menidia beryllina)
		1250 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Ecotoxicity	LC50: 36327 mg/L, Fish, 96.00 Hours EC50: 26428 mg/L, Daphnia, 48.00 Hours IC50: 11902 mg/L, Algae, 72.00 Hours Components of this product have been identified as having potential environmental concerns.
Environmental effects	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Persistence and degradability	Not available.
Partition coefficient	
Butane	2.89
Ethanol	-0.31
Ethylene Glycol Monobutyl Ether	0.83
Propane	2.36

13. Disposal Considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Contents under pressure. Do not puncture, incinerate or crush. Do not allow this material to drain into sewers/water supplies. Dispose in accordance with all applicable regulations.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied. Do not re-use empty containers.

14. Transport Information

TDG

UN number	UN1950
UN proper shipping name	AEROSOLS, flammable
Hazard class	2.1
Marine pollutant	•
Special provisions	80 SOR/2002-306
Labels required	2.1
Packaging exceptions	If <1L: Limited Quantity

IATA

UN number	UN1950
UN proper shipping name	Aerosols, flammable
Transport hazard class(es)	2.1
Labels required	2.1
ERG code	10L
Special precautions for user	Read safety instructions, MSDS and emergency procedures before handling.
Packaging Exceptions	LTD QTY

IMDG

UN number	UN1950
UN proper shipping name	AEROSOLS
Transport hazard class(es)	2.1
Labels required	None
Special precautions for user	Read safety instructions, MSDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Packaging Exceptions Not applicable.
LTD QTY

IATA; IMDG; TDG



15. Regulatory Information

Canadian regulations

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS status

Controlled

WHMIS classification

A - Compressed Gas
D2A - Other Toxic Effects-VERY TOXIC
D2B - Other Toxic Effects-TOXIC

WHMIS labeling



Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)
Australia	Australian Inventory of Chemical Substances (AICS)	()
Canada	Domestic Substances List (DSL)	()
Canada	Non-Domestic Substances List (NDSL)	N
China	Inventory of Existing Chemical Substances in China (IECSC)	N
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Y
Europe	European List of Notified Chemical Substances (ELINCS)	N
Japan	Inventory of Existing and New Chemical Substances (ENCS)	N
Korea	Existing Chemicals List (ECL)	N
New Zealand	New Zealand Inventory	N
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	N
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Y

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other Information

Disclaimer

The information in the sheet was written based on the best knowledge and experience currently available. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates on to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

JOHNSON MANUFACTURING COMPANY
Material Safety Data Sheet
 To comply with 29CFR 1910.1200
 OSHA's Hazard Communication Standard

SOLDER**Tin/Lead Alloys****1. PRODUCT AND COMPANY INFORMATION**

Johnson Manufacturing Company
 114 Lost Grove Road
 Princeton IA 52768

Emergency Telephone 1-(563)-289-5123
 CHEMTREC AFTER HOURS 1-(800)-424-9300
 Revised 1/1/2015 by JMC Product Safety

2. HAZARD IDENTIFICATION**GHS Classification:**

Acute Tox. 4 *
 Aquatic Acute 1
 Chronic tox 2
 Repro tox 2
 Carcino 2

**GHS Label Elements:****LEAD & TIN
WARNING**

H Codes: H302, H332, H351, H361, H373, H410

Harmful if swallowed

Harmful if inhaled

Suspected of causing cancer

Suspected of damaging fertility or the unborn child

May cause damage to organs through prolonged or repeated exposure

Very toxic to aquatic life with long lasting effects

P Codes:

P264, 270, 281, 301+312, 330, 501, 260, 312, 330, 261, 271, 301+312, 304+340, 405, 273, 305+351+338, 201, 202, 314, 391, 308+313

Do not handle until all safety precautions have been read & understood. Avoid breathing dust/mist/vapors/fumes/spray. Do not get in eyes, on skin, or on clothing. Use in a well ventilated area. Wear protective gloves/protective clothing/eye protection/face protection. In case of inadequate ventilation use respiratory protection. Do not breathe dust/fume/gas/mist/vapor/spray. Do not eat, drink or smoke when using this product. IF SWALLOWED: Rinse mouth. DO NOT induce vomiting. Immediately call a POISON CENTER/Doctor. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Wash with soap & water. Get medical advice/attention if skin irritation or rash occurs or if you feel unwell. IF INHALED: Remove victim to fresh air and keep comfortable for breathing. Get medical advice/attention if you feel unwell. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call POISON CENTER/Doctor. Wash thoroughly after use. Wash contaminated clothing before reuse. Store in a closed compatible container in cool dry place. Avoid release to the environment. Dispose of contents/container in accordance with specified local/regional/national/international regulations for disposal. Keep out of the reach of children. Read label and SDS prior to use.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Component	CAS #	OSHA TWA	ACIGH TWA	Other limits	%
Tin	7440-31-5	2mg/M3	2mg/M3	NE	
* + Lead	7439-92-1	0.05mg/M3	0.05mg/M3	NE	% as specified

Only those ingredients listed in this section have been determined to be hazardous as defined in 29CFR 1910.1200.

An ingredient marked with an asterisk(*) is also listed in 29CFR 1910.1200(D) #4 as a known or suspected cancer hazard.

+ denotes a chemical regulated as toxic by the Environmental Protection Agency (EPA) as outlined in 40CFR Part 372 (section 313)

4. FIRST AID MEASURES

Signs and symptoms of exposure: Inhalation-Nose & throat irritation, headache, dizziness, difficulty breathing, coughing. Ingestion-nausea, vomiting, cramps. Skin-redness, burning, rash, dryness. Eye-redness, burning, tearing, blurred vision.

Medical conditions aggravated by exposure: Skin, kidney and respiratory conditions.

Emergency first aid procedures:

Skin: Flush with water immediately - Seek medical attention if necessary

Eyes: Flush with water for 15 minutes - Seek medical attention

Ingestion: DO NOT induce vomiting, drink large amounts of water - seek medical attention. Never give anything by mouth to an unconscious person

Inhalation: Remove to fresh air. Support respiration if required - Seek medical attention

5. FIREFIGHTING MEASURES

Extinguishing media: dry chemical.

Special fire fighting procedures: use self sustaining respiratory suit.

Unusual Fire and Explosion Hazards: May release Toxic metal & oxide fumes. High concentrations of dust may present explosion hazard. Water trapped below molten may explode thus spattering molten metal.

6. ACCIDENTAL RELEASE MEASURES

Methods and materials: Flush into chemical sewer or sweep up with a suitable absorbent. Wear adequate protection as described in section 8.

Environmental Precautions: Avoid release to the environment. Collect spillage.

7. HANDLING & STORAGE

Wash thoroughly after use. Wash contaminated clothing before reuse. Store in a closed corrosive resistant container, with corrosive resistant liner, in cool dry place. Keep out of the reach of children. Read label and SDS prior to use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limit Values: See section 3.

Respiratory Protection (type): HEPA mask required for fumes above TWA.

Ventilation: Local Exhaust preferred Special: NE

Mechanical: OK Other: NE

Protective Gloves: plastic or rubber **Eye Protection:** Goggles or face shield

Other Protective Clothing or Equipment: as required to avoid contact.

Work/Hygienic Practices: Wash after use. Follow good industrial hygienic practices.

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point: 3164 F

Specific Gravity: 7.8

Vapor Pressure (mm Hg): NE

Melting Point: NE

Vapor Density: NE

Evaporation Rate: <1 (butyl acetate=1)

Solubility in water: negligible

pH: NE

Flash Point: NE (TOC)

Flammable Limits: lel: NE uel: NE

Appearance and odor: Silver/Grey solid, odorless.

10. STABILITY AND REACTIVITY

Stability : STABLE **Conditions to avoid :** none

Incompatibility (materials to avoid): strong bases & acids, oxidizers, sulfides, halogens.

Hazardous Decomposition or Byproducts (incomplete combustion): May release Toxic metal & oxide fumes. High concentrations of dust may present explosion hazard. Water trapped below molten may explode thus spattering molten metal.

Hazardous Polymerization: WILL NOT OCCUR **Conditions to avoid:** none

11. TOXICOLOGICAL INFORMATION

Routes of entry: Inhalation: yes Skin: no Ingestion: yes

Health Hazards (acute and chronic): Contact with dust and fumes may cause skin, eye and respiratory irritation. Ingestion and/or inhalation of material or fumes may result in flu like symptoms, insomnia, muscle weakness, nausea and abdominal pain. gross inhalation or ingestion may be toxic and can result in death. Symptoms of toxicity may take hours or days to manifest. Chronic exposures, inhalation and ingestion, may result in kidney, red blood cell, reproductive and nervous system effects. Health effects may be cumulative over many exposures. Studies show that health risks vary by individual. Minimize exposure as a precaution. See OSHA 29CFR 1910.1025(subpart Z) for more information.

Carcinogenicity: not determined NPT? no IARC Monographs? Lead-suspect

12. ECOLOGICAL INFORMATION

Toxicity: NE
Bio-accumulative Potential: NE
PBT & vPvB Assessment: NE

Persistence & Degradability: NE
Mobility in Soil: NE
Other Adverse Effects: NE

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method: dispose of in accordance with all local state and federal regulations

Other Precautions: Avoid skin & eye contact, inhalation & ingestion of fumes and material. Wash contaminated clothing before reuse. Keep away from children.

14. TRANSPORT INFORMATION

DOT Classification: Non-Hazardous
Marine Pollutant: NE

15. REGULATORY INFORMATION

NFPA Classification (NFPA 325M, 8th edition)(Health, Flammability, Reactivity): 2-0-0
This product contains components known to the state of California to cause cancer or reproductive harm.

16. OTHER INFORMATION

The information and recommendations contained within this publication have been compiled from sources believed to be reliable and to represent the best information available to JOHNSON MANUFACTURING at the time of issue. No warranty, guarantee, or representation is made by JOHNSON MANUFACTURING nor does JOHNSON MANUFACTURING assume any responsibility in connection there with; nor can it be assumed that all acceptable safety measures or other safety measures may not be required under particular or exceptional conditions or circumstances.

NE = not established NA = not applicable

Form 303.118 Rev.D

SAFETY DATA SHEET



SO-BRITE PLUS

Section 1. Identification

GHS product identifier : SO-BRITE PLUS
Product code : 11803100, 11803150, 11803330, 11803470
SDS # : DUB00055
Other means of identification : Not available.
Product type : Liquid.
Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Vehicle Cleaner
Supplier/Manufacturer : DuBois Chemicals, Inc. DuBois Chemicals Canada, Inc.
3630 E. Kemper Road 1155 North Service Road West
Cincinnati, Ohio 45241 Unit 6
Phone: 1-800-438-2647 Oakville, Ontario, L6M 3E3 Canada
Phone: 1-866-861-3603
Emergency telephone number : 1-866-923-4919 (US and Canada)
01-651-523-0314 (Int'l and Mexico)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 1C
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1

GHS label elements

Hazard pictograms :



Signal word : Danger
Hazard statements : Causes severe skin burns and eye damage.

Precautionary statements

Prevention : Wear eye/face protection. Wear protective gloves. Wear protective clothing. Wash hands thoroughly after handling.
Response : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.

Storage : Store locked up.
Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Ingredient name	%	CAS number
Poly(oxy-1,2-ethanediyl), α -phenyl- ω -hydroxy-, phosphate	1 - 5	39464-70-5
glycollic acid	1 - 5	79-14-1
ammonium bifluoride	0.1 - 1	1341-49-7

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
- Inhalation** : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Skin contact** : Get medical attention immediately. Call a poison center or physician. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : Causes severe burns.
- Ingestion** : May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Section 4. First aid measures

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
- Ingestion** : Adverse symptoms may include the following:
stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.
- Specific hazards arising from the chemical** : In a fire or if heated, a pressure increase will occur and the container may burst.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
phosphorus oxides
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Methods for cleaning up**
- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 6. Accidental release measures

- Large spill** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	CAS #	ACGIH	OSHA	Mexico
ammonium bifluoride	1341-49-7	TWA: 2.5 mg/m ³ , (as F) 8 hours.	TWA: 2.5 mg/m ³ 8 hours. Form: Dust TWA: 2.5 mg/m ³ , (as F) 8 hours.	

- Engineering measures** : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Personal protection**
- Respiratory** : If a risk assessment indicates this is necessary, use a properly fitted, air-purifying or airfed respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. Recommended: splash goggles
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Section 8. Exposure controls/personal protection

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Personal protective equipment (Pictograms) :



Section 9. Physical and chemical properties

Appearance

Physical state	: Liquid.
Color	: Yellow. [Light]
Odor	: acidic smell
Odor threshold	: Not available.
pH	: 3.4
Melting point	: Not available.
Boiling point	: Not available.
Flash point	: Closed cup: >93.3°C (>199.9°F)
Burning time	: Not applicable.
Burning rate	: Not applicable.
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: Not available.
Relative density	: 1.06
Solubility	: Easily soluble in the following materials: cold water and hot water.
Solubility in water	: Not available.
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: Not available.
Elemental Phosphorus	: 0.9 %
VOC content	: Not available.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.
Incompatible materials	: Highly reactive or incompatible with the following materials: alkalis.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 10. Stability and reactivity

Storage : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 11. Toxicological information

Information on toxicological effects

Carcinogenicity

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
ammonium bifluoride	A4	3	-	-	-	-

Information on the likely routes of exposure : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact : Causes severe burns.

Ingestion : May cause burns to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain
watering
redness

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Ingestion : Adverse symptoms may include the following:
stomach pains

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Section 11. Toxicological information

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	69214.3 mg/kg
Inhalation (vapors)	128.6 mg/l

Section 12. Ecological information

Ecotoxicity : Not available.

Aquatic ecotoxicity

Not available.

Section 13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

RCRA classification : D002 [corrosive]

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport information

IATA/IMDG/DOT/TDG: Please refer to the Bill of Lading/receiving documents for up to date shipping information.

Section 15. Regulatory information

U.S. Federal regulations : TSCA 12(b) one-time export: No products were found.
TSCA 12(b) annual export notification: No products were found.
United States inventory (TSCA 8b): All components are listed or exempted.
CERCLA: Hazardous substances.: ammonium bifluoride: 100 lbs. (45.4 kg);

EPA Registration Number : Not available.

Clean Air Act Section 112 : Not listed

(b) Hazardous Air
Pollutants (HAPs)

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Immediate (acute) health hazard
Delayed (chronic) health hazard

State regulations

Massachusetts : None of the components are listed.

Section 15. Regulatory information

- New York** : None of the components are listed.
- New Jersey** : The following components are listed: PROPYLENE GLYCOL; 1,2-PROPANEDIOL
- Pennsylvania** : The following components are listed: 1,2-PROPANEDIOL
- California Prop. 65**
Not available.

Canada

Canadian lists

- Canadian NPRI** : None of the components are listed.
- Canada inventory** : At least one component is not listed in DSL but all such components are listed in NDSL.
- Canadian PCP/DIN Number** : Not available.

International regulations

- International lists** :
- Australia inventory (AICS)**: Not determined.
 - China inventory (IECSC)**: Not determined.
 - Japan inventory**: Not determined.
 - Korea inventory**: Not determined.
 - Malaysia Inventory (EHS Register)**: Not determined.
 - New Zealand Inventory of Chemicals (NZIoC)**: Not determined.
 - Philippines inventory (PICCS)**: Not determined.
 - Taiwan inventory (CSNN)**: Not determined.

Section 16. Other information

History

- Date of printing** : 7/16/2015.
- Date of issue/Date of revision** : 7/16/2015.
- Date of previous issue** : 9/26/2014.
- Version** : 2

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

32-15264-6

Material Safety Data Sheet: **Crystal Simple Green® Industrial Cleaner/Degreaser**

Simple Green® Safety Towels

Version No. 19128-12A Date of Issue: December 2012

ANSI-Z400.1-2003 Format

Section 1: PRODUCT & COMPANY IDENTIFICATION

Product Name: Crystal Simple Green® Industrial Cleaner and Degreaser
Additional Names: Simple Green® Safety Towels (fluid only)

Manufacturer's Part Number: **Please refer to page 4*

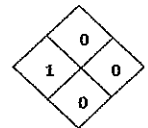
Company: Sunshine Makers, Inc.
15922 Pacific Coast Highway
Huntington Beach, CA 92649 USA

Telephone: 800-228-0709 • 562-795-6000 Fax: 562-592-3830

Emergency Phone: Chem-Tel 24-Hour Emergency Service: 800-255-3924

Section 2: HAZARDS IDENTIFICATION

Emergency Overview: CAUTION. Irritant. This is a clear colored liquid with a chemical/detergent odor. Safety towels are infused with a diluted version of mixture.



NFPA/HMIS Rating:
Health = 1 = slight
Fire, Reactivity, and Special = 0 = minimal

Potential Health Effects

- Eye Contact:** Mildly irritating.
- Skin Contact:** No adverse effects expected under typical use conditions. Prolonged exposure may cause dryness. Chemically sensitive individuals may experience mild irritation.
- Ingestion:** May cause stomach or intestinal irritation if swallowed.
- Inhalation:** No adverse effects expected under typical use conditions. Adequate ventilation should be present for prolonged usage in small enclosed areas.

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS Number</u>	<u>Percent Range</u>
Water	7732-18-5	≥ 78%
2-butoxyethanol	111-76-2	≤ 6%
Ethoxylated Alcohol Mixture	Proprietary	≤ 5%
Tetrapotassium Pyrophosphate	7320-34-5	≤ 5%
Sodium Citrate	68-04-2	≤ 5%
Fragrance	Proprietary	≤ 1%

Section 4: FIRST AID MEASURES

- If Inhaled:** If adverse effect occurs, move to fresh air.
If on skin: If adverse effect occurs, rinse skin with water.
If in eyes: Flush with plenty of water. After 5 minutes of flushing, remove contact lenses, if present. Continue flushing for at least 10 more minutes. If irritation persists seek medical attention.
If ingested: Drink plenty of water to dilute.

Section 5: FIRE FIGHTING MEASURES

This formula is stable, non-flammable, and will not burn. No special procedures necessary

Flammability: Non-flammable

Flash Point: Non-flammable

Suitable Extinguishing Media: Use Dry chemical, CO₂, water spray or "alcohol" foam.

Extinguishing Media to Avoid: High volume jet water.

Special Exposure Hazards: In event of fire created carbon oxides, oxides of phosphorus may be formed.

Special Protective Equipment: Wear positive pressure self-contained breathing apparatus; Wear full protective clothing.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions: See section 8 – personal protection.

Environmental Precautions: Do not allow into open waterways and ground water systems.

Method for Clean Up: Dilute with water and rinse into sanitary sewer system or soak up with inert absorbent material.

Section 7: HANDLING AND STORAGE

Handling: Keep container tightly closed. Ensure adequate ventilation. Keep out of reach of children.

Storage: Keep in cool dry area.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limit Values:

2-butoxyethanol

Tetrapotassium Pyrophosphate

OSHA PEL

TWA 50 ppm (240 mg/m³)

ACGIH TLV

20 ppm (97 mg/m³)

5 mg/m³

Exposure Controls:

Eye Contact: Use protective glasses if splashing or spray-back is likely.

Respiratory: Use in well ventilated areas.

Skin Contact: Prolonged exposure or dermal sensitive individuals should use protective gloves.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear Liquid	Vapor Pressure:	18 mmHg @20°C; 23.5 mmHg @26°C
Odor:	No added odor; chemical/detergent	Density:	8.5 lb/gal;
Specific Gravity:	1.020 ± 0.010	Water Solubility:	100%
pH:	9.0 – 9.9 (Crystal)	VOC composite Partial Pressure:	TBD
	8.0 – 8.9 (Safety Towel)	Nutrient Content:	Phosphorous: 0.28%
Boiling Point:	~212°F (100.6°C)		Sulfur: ~180 ppm Fluorine: ~90 ppm
Freezing Point:	~ 16°F (-9°C)		Chloride: ~110 ppm
VOC Fluid:	CARB Method 310 = 5.8%*	SCAQMD Method 313 = 6.6%*	* product must be diluted to meet air quality regulations
VOC Fluid Triggers only:	CARB Method 310 = 3.8%		
VOC Safety towels:	CARB Method 310 = 1%		

Section 10: STABILITY AND REACTIVITY

Stability: Stable
 Materials to Avoid: None known
 Hazardous Decomposition Products: Normal products of combustion - CO, CO2; Oxides of Phosphorous may occur.

Section 11: TOXICOLOGICAL INFORMATION

Acute Toxicity: Oral LD₅₀ (rat) > 5 g/kg body weight
 Dermal LD₅₀ (rabbit) > 5 g/kg body weight
 Toxicity calculated from ingredients using OECD SERIES ON TESTING AND ASSESSMENT Number 33

Carcinogens: No ingredients are listed by OSHA, IARC, or NTP as known or suspected carcinogens.

Section 12: ECOLOGICAL INFORMATION

Hazard to wild mammals: Low, based on toxicology profile
 Hazard to avian species: Low, based on toxicology profile
 Hazard to aquatic organisms: Low, based on toxicology profile
 Chemical Fate Information: Readily Biodegradable based on biodegradability profile of ingredients

Section 13: DISPOSAL CONSIDERATIONS

Appropriate Method for Disposal:

- Unused Product: *Dilute with water to use concentration and dispose by sanitary sewer.
- Used Product: *This product can enter into clarifiers and oil/water separators. Used product may be hazardous depending on the cleaning application and resulting contaminants.
- Empty Containers: *Triple-rinse with water and offer for recycling if available in your area. Otherwise, dispose as non-hazardous waste.

*Dispose of used or unused product, and empty containers in accordance with the local, State, Provincial, and Federal regulations for your location. Never dispose of used degreasing rinsates into lakes, streams, and open bodies of water or storm drains.

Material Safety Data Sheet: **Crystal Simple Green® Industrial Cleaner/Degreaser**

Simple Green® Safety Towels

Version No. 19128-12A Date of Issue: December 2012

ANSI-Z400.1-2003 Format

Section 14: TRANSPORT INFORMATION

U.S. Department of Transportation (DOT) / Canadian TDG: Not Regulated

IMO / IDMG: Not classified as Dangerous

ICAO/ IATA: Not classified as Dangerous

ADR/RID: Not classified as Dangerous

U.N. Number: Not Required Proper Shipping Name: Detergent Solution

Hazard Class: Non-Hazardous Marine Pollutant: No

Section 15: REGULATORY INFORMATION

All components are listed on: EINECS, TSCA, DSL and AICS Inventory.

No components listed under: Clean Air Act Section 112; Clean Water Act 307 & 311

SARA Title III 2-butoxyethanol is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 as Category N230 – Certain Glycol Ethers.

RCRA Status: Not a hazardous waste CERCLA Status: No components listed

State Right To Know Lists
2-butoxyethanol Illinois, Massachusetts, New Jersey, Pennsylvania, Rhode Island

WHMIS Classification – Not classified as hazardous

Name	Toxic Substances List – Schedule 1 – CEPA (Canadian Environmental Protection Act)	NPRI Inventory
2-butoxyethanol	Yes	No

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by Canada’s Controlled Products Regulation.

Section 16: OTHER INFORMATION

Questions about the information found on this MSDS should be directed to:
 SUNSHINE MAKERS, INC. – TECHNICAL DEPARTMENT
 15922 Pacific Coast Hwy. Huntington Beach, CA 92649
 Phone: 800/228-0709 [8am-5pm Pacific time, Mon-Fri] Fax: 562/592-3830 Email: infoweb@simplegreen.com

National Stock Numbers & Industrial Numbers:

Crystal	Part Number	NSN	Size
	19024	7930-01-418-1151	24 oz. spray (12/cs)
	19128	7930-01-418-1152	1 Gal. (6/cs)
	19005	7930-01-418-1153	5 Gal.

Safety Towels	Part Number	Size
	13322	5 count pouch (50/cs)
	13351	75-count canister (6/cs)

****International Part Numbers May Differ.**

DISCLAIMER: The information provided with this MSDS is furnished in good faith and without warranty of any kind. Personnel handling this material must make independent determinations of the suitability and completeness of information from all sources to assure proper use and disposal of this material and the safety and health of employees and customers. Sunshine Makers, Inc. assumes no additional liability or responsibility resulting from the use of, or reliance on this information.

92-19177-6



Material Safety Data Sheet

Copyright, 2008, 3M Company. All rights reserved. Copying and/or downloading of this information for the purpose of properly utilizing 3M products is allowed provided that: (1) the information is copied in full with no changes unless prior written agreement is obtained from 3M, and (2) neither the copy nor the original is resold or otherwise distributed with the intention of earning a profit thereon.

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: 3M(TM) Scotch-Weld(TM) Rubber and Gasket Adhesive 4799
MANUFACTURER: 3M
DIVISION: Industrial Adhesives and Tapes Division
ADDRESS: 3M Center
St. Paul, MN 55144-1000

EMERGENCY PHONE: 1-800-364-3577 or (651) 737-6501 (24 hours)

Issue Date: 01/28/2008
Supersedes Date: 05/17/2005

Document Group: 10-2754-9

Product Use:

Specific Use: Adhesive for rubber to metal.
Intended Use: Industrial use

SECTION 2: INGREDIENTS

<u>Ingredient</u>	<u>C.A.S. No.</u>	<u>% by Wt</u>
Naphtha (Petroleum), solvent-refined light	64741-84-0	30 - 60
n-Hexane	110-54-3	10 - 30
Talc	14807-96-6	5 - 10
Toluene	108-88-3	3 - 7
Hydrocarbon Resin	68478-07-9	3 - 7
Polyisoprene	9003-31-0	3 - 7
Styrene-Butadiene Polymer	9003-55-8	3 - 7
Magnesium Resinate	68611-24-5	1 - 5
Cyclohexane	110-82-7	1 - 5
Zinc Resinate	68188-23-8	1 - 5
Ethyl Alcohol	64-17-5	0.1 - 1
Zinc Oxide	1314-13-2	0.1 - 1
Carbon Black	1333-86-4	0.1 - 0.5

SECTION 3: HAZARDS IDENTIFICATION

3.1 EMERGENCY OVERVIEW

Odor, Color, Grade: black, mild odor

General Physical Form: Liquid

Immediate health, physical, and environmental hazards: Closed containers exposed to heat from fire may build pressure and explode. Extremely flammable liquid and vapor. Vapors may travel long distances along the ground or floor to an ignition source and flash back. Contains a chemical or chemicals which can cause cancer. May cause target organ effects. Contains a chemical or chemicals which can cause birth defects or other reproductive harm.

3.2 POTENTIAL HEALTH EFFECTS

Eye Contact:

Mild Eye Irritation: Signs/symptoms may include redness, pain, and tearing.

Skin Contact:

Moderate Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, and dryness.

May be absorbed through skin and cause target organ effects.

Inhalation:

Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Prolonged or repeated exposure may cause:

Respiratory Effects: Signs/symptoms may include cough, shortness of breath, chest tightness, wheezing, increased heart rate, bluish colored skin (cyanosis), sputum production, changes in lung function tests, and/or respiratory failure.

May be absorbed following inhalation and cause target organ effects.

Ingestion:

Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

May be absorbed following ingestion and cause target organ effects.

Target Organ Effects:

Central Nervous System (CNS) Depression: Signs/symptoms may include headache, dizziness, drowsiness, incoordination, nausea, slowed reaction time, slurred speech, giddiness, and unconsciousness.

Prolonged or repeated exposure may cause:

Ocular Effects: Signs/symptoms may include blurred or significantly impaired vision.

Auditory Effects: Signs/symptoms may include hearing impairment, balance dysfunction and ringing in the ears.

Peripheral Neuropathy: Signs/symptoms may include tingling or numbness of the extremities, incoordination, weakness of the hands and feet, tremors and muscle atrophy.

Olfactory Effects: Signs/symptoms may include decreased ability to detect odors and/or complete loss of smell.

Neurological Effects: Signs/symptoms may include personality changes, lack of coordination, sensory loss, tingling or numbness of the extremities, weakness, tremors, and/or changes in blood pressure and heart rate.

Contains a chemical or chemicals which can cause birth defects or other reproductive harm.

Carcinogenicity:

Contains a chemical or chemicals which can cause cancer.

NOTE: This product contains ethanol. In IARC published Monograph No. 44, entitled, "Alcohol Drinking", the carcinogenicity of ethanol was determined based on chronic exposure to ethanol through human consumption of alcoholic beverages. This is not an expected effect during the foreseeable use of this product.

<u>Ingredient</u>	<u>C.A.S. No.</u>	<u>Class Description</u>	<u>Regulation</u>
Carbon Black	1333-86-4	Group 2B	International Agency for Research on Cancer
Ethyl Alcohol	64-17-5	Group 1	International Agency for Research on Cancer

SECTION 4: FIRST AID MEASURES

4.1 FIRST AID PROCEDURES

The following first aid recommendations are based on an assumption that appropriate personal and industrial hygiene practices are followed.

Eye Contact: Flush eyes with large amounts of water. If signs/symptoms persist, get medical attention.

Skin Contact: Remove contaminated clothing and shoes. Immediately flush skin with large amounts of water. Get medical attention. Wash contaminated clothing and clean shoes before reuse.

Inhalation: Remove person to fresh air. If signs/symptoms develop, get medical attention.

If Swallowed: Do not induce vomiting unless instructed to do so by medical personnel. Give victim two glasses of water. Never give anything by mouth to an unconscious person. Get medical attention.

SECTION 5: FIRE FIGHTING MEASURES

5.1 FLAMMABLE PROPERTIES

Autoignition temperature	<i>No Data Available</i>
Flash Point	-14 °F [<i>Test Method: Closed Cup</i>]
Flammable Limits - LEL	1 % volume
Flammable Limits - UEL	7 % volume

5.2 EXTINGUISHING MEDIA

Use fire extinguishers with class B extinguishing agents (e.g., dry chemical, carbon dioxide).

5.3 PROTECTION OF FIRE FIGHTERS

Special Fire Fighting Procedures: Water may not effectively extinguish fire; however, it should be used to keep fire-exposed containers and surfaces cool and prevent explosive rupture. Wear full protective equipment (Bunker Gear) and a self-contained breathing apparatus (SCBA).

Unusual Fire and Explosion Hazards: Closed containers exposed to heat from fire may build pressure and explode. Extremely

flammable liquid and vapor. Vapors may travel long distances along the ground or floor to an ignition source and flash back.

Note: See STABILITY AND REACTIVITY (SECTION 10) for hazardous combustion and thermal decomposition information.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Accidental Release Measures: Refer to other sections of this MSDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment. Call 3M-HELPS line (1-800-364-3577) for more information on handling and managing the spill. Evacuate unprotected and untrained personnel from hazard area. The spill should be cleaned up by qualified personnel. Remove all ignition sources such as flames, smoking materials, and electrical spark sources. Use only non-sparking tools. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice. **Warning!** A motor could be an ignition source and could cause flammable gases or vapors in the spill area to burn or explode. Contain spill. For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water. Cover spill area with a fire-extinguishing foam. An aqueous film forming foam (AFFF) is recommended. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Remember, adding an absorbent material does not remove a toxic, corrosivity or flammability hazard. Collect as much of the spilled material as possible using non-sparking tools. Clean up residue with an appropriate solvent selected by a qualified and authorized person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and MSDS. Collect the resulting residue containing solution. Place in a metal container approved for transportation by appropriate authorities. Seal the container. Dispose of collected material as soon as possible.

In the event of a release of this material, the user should determine if the release qualifies as reportable according to local, state, and federal regulations.

SECTION 7: HANDLING AND STORAGE

7.1 HANDLING

Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water. Ground containers securely when transferring contents. Wear low static or properly grounded shoes. Avoid breathing of vapors, mists or spray. Avoid static discharge. Avoid eye contact with vapors, mists, or spray. Keep out of the reach of children. Vapors may ignite explosively. May cause flash fire. Prevent build-up of vapors - open all windows and doors. Maintain vapor concentrations below recommended exposure limits. Use only with cross-ventilation. Without adequate ventilation, vapors may settle in low-lying areas. Keep away from heat, sparks, and open flame. Do not smoke or ignite matches, lighters, etc. Avoid contact with oxidizing agents.

7.2 STORAGE

Store away from acids. Store away from heat. Store out of direct sunlight. Keep container in well-ventilated area. Keep container tightly closed. Store away from oxidizing agents.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 ENGINEERING CONTROLS

Provide appropriate local exhaust ventilation on open containers. Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below Occupational Exposure Limits and/or control mist, vapor, or spray. If ventilation is not adequate, use respiratory protection equipment.

8.2 PERSONAL PROTECTIVE EQUIPMENT (PPE)

8.2.1 Eye/Face Protection

Avoid eye contact with vapors, mists, or spray.

The following eye protection(s) are recommended: Safety Glasses with side shields, Indirect Vented Goggles.

8.2.2 Skin Protection

Avoid skin contact.

Select and use gloves and/or protective clothing to prevent skin contact based on the results of an exposure assessment. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible materials.

Gloves made from the following material(s) are recommended: Polyvinyl Alcohol (PVA).

8.2.3 Respiratory Protection

Avoid breathing of vapors, mists or spray.

Select one of the following NIOSH approved respirators based on airborne concentration of contaminants and in accordance with OSHA regulations: Half facepiece or fullface air-purifying respirator with organic vapor cartridges. Consult the current 3M Respiratory Selection Guide for additional information or call 1-800-243-4630 for 3M technical assistance.

8.2.4 Prevention of Swallowing

Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water.

8.3 EXPOSURE GUIDELINES

<u>Ingredient</u>	<u>Authority</u>	<u>Type</u>	<u>Limit</u>	<u>Additional Information</u>
Carbon Black	ACGIH	TWA	3.5 mg/m3	Table A4
Carbon Black	CMRG	TWA	0.5 mg/m3	
Carbon Black	OSHA	TWA	3.5 mg/m3	Table Z-1
Cyclohexane	ACGIH	TWA	100 ppm	
Cyclohexane	OSHA	TWA	300 ppm	Table Z-1
Ethyl Alcohol	ACGIH	TWA	1000 ppm	Table A4
Ethyl Alcohol	OSHA	TWA	1000 ppm	Table Z-1
n-Hexane	ACGIH	TWA	50 ppm	Skin Notation*
n-Hexane	OSHA	TWA, Vacated	50 ppm	Table Z-1A
n-Hexane	OSHA	TWA	500 ppm	Table Z-1A
Talc	ACGIH	TWA, respirable	2 mg/m3	Table A4
Talc	CMRG	TWA, as respirable dust	0.5 mg/m3	
Talc	OSHA	TWA, respirable	2 mg/m3	Table Z-1A
Toluene	ACGIH	TWA	20 ppm	Table A4
Toluene	CMRG	STEL	75 ppm	Skin Notation*
Toluene	OSHA	TWA, Vacated	100 ppm	
Toluene	OSHA	STEL, Vacated	150 ppm	
Toluene	OSHA	TWA	200 ppm	Table Z-2
Toluene	OSHA	CEIL	300 ppm	Table Z-2
Zinc Oxide	ACGIH	TWA, respirable	2 mg/m3	
Zinc Oxide	ACGIH	STEL	10 mg/m3	
Zinc Oxide	OSHA	TWA, as fume	5 mg/m3	Table Z-1
Zinc Oxide	OSHA	TWA, respirable	5 mg/m3	Table Z-1
Zinc Oxide	OSHA	STEL, Vacated, as fume	10 mg/m3	
Zinc Oxide	OSHA	TWA, Vacated, as dust	10 mg/m3	
Zinc Oxide	OSHA	TWA, as total dust	15 mg/m3	Table Z-1

* Substance(s) refer to the potential contribution to the overall exposure by the cutaneous route including mucous membrane and eye, either by airborne or, more particularly, by direct contact with the substance. Vehicles can alter skin absorption.

VAC Vacated PEL: Vacated Permissible Exposure Limits [PEL] are enforced as the OSHA PEL in some states. Check with your local regulatory agency.

SOURCE OF EXPOSURE LIMIT DATA:

ACGIH: American Conference of Governmental Industrial Hygienists
 CMRG: Chemical Manufacturer Recommended Guideline
 OSHA: Occupational Safety and Health Administration
 AIHA: American Industrial Hygiene Association Workplace Environmental Exposure Level (WEEL)

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Odor, Color, Grade:	black, mild odor
General Physical Form:	Liquid
Autoignition temperature	<i>No Data Available</i>
Flash Point	-14 °F [<i>Test Method:</i> Closed Cup]
Flammable Limits - LEL	1 % volume
Flammable Limits - UEL	7 % volume
Boiling point	140 °F
Density	0.82 g/ml
Vapor Density	3 [<i>Ref Std:</i> AIR=1]
Vapor Pressure	120 mmHg [<i>Details:</i> CONDITIONS: @ 68F]
Specific Gravity	0.82 [<i>Ref Std:</i> WATER=1]
pH	<i>No Data Available</i>
Melting point	<i>No Data Available</i>
Solubility in Water	Slight (less than 10%)
Evaporation rate	2.50 [<i>Ref Std:</i> ETHER=1]
Hazardous Air Pollutants	Approximately 22 % weight [<i>Test Method:</i> Calculated]
Volatile Organic Compounds	587 g/l [<i>Test Method:</i> calculated SCAQMD rule 443.1]
Percent volatile	Approximately 65 % weight
VOC Less H2O & Exempt Solvents	587 g/l [<i>Test Method:</i> calculated SCAQMD rule 443.1]
Viscosity	7500 - 18000 centipoise

SECTION 10: STABILITY AND REACTIVITY

Stability: Stable.

Materials and Conditions to Avoid: Strong oxidizing agents

Hazardous Polymerization: Hazardous polymerization will not occur.

Hazardous Decomposition or By-Products

<u>Substance</u>	<u>Condition</u>
Aldehydes	During Combustion
Hydrocarbons	During Combustion
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion
Ketones	During Combustion
Oxides of Zinc	During Combustion

SECTION 11: TOXICOLOGICAL INFORMATION

Please contact the address listed on the first page of the MSDS for Toxicological Information on this material and/or its components.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION

Not determined.

CHEMICAL FATE INFORMATION

Not determined.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Method: Incinerate in a permitted hazardous waste incinerator. As a disposal alternative, dispose of waste product in a permitted hazardous waste facility.

EPA Hazardous Waste Number (RCRA): D001 (Ignitable)

Since regulations vary, consult applicable regulations or authorities before disposal.

SECTION 14: TRANSPORT INFORMATION

ID Number(s):

62-4799-2631-3, 62-4799-2635-4, 62-4799-5530-4, 62-4799-6530-3, 62-4799-7530-2, 62-4799-8530-1, 62-4799-9530-0, 62-4799-9531-8, XS-0414-1121-5

Please contact the emergency numbers listed on the first page of the MSDS for Transportation Information for this material.

SECTION 15: REGULATORY INFORMATION

US FEDERAL REGULATIONS

Contact 3M for more information.

311/312 Hazard Categories:

Fire Hazard - Yes Pressure Hazard - No Reactivity Hazard - No Immediate Hazard - Yes Delayed Hazard - Yes

Section 313 Toxic Chemicals subject to the reporting requirements of that section and 40 CFR part 372 (EPCRA):

<u>Ingredient</u>	<u>C.A.S. No</u>	<u>% by Wt</u>
Toluene	108-88-3	3 - 7
Zinc Resinate (ZINC COMPOUNDS)	68188-23-8	1 - 5
n-Hexane	110-54-3	10 - 30
Cyclohexane	110-82-7	1 - 5
Zinc Oxide (ZINC COMPOUNDS)	1314-13-2	0.1 - 1

This material contains a chemical which requires export notification under TSCA Section 12[b]:

<u>Ingredient (Category if applicable)</u>	<u>C.A.S. No</u>	<u>Regulation</u>	<u>Status</u>
Cyclohexane	110-82-7	Toxic Substances Control Act (TSCA) 4 Test Rule Chemicals	Applicable

STATE REGULATIONS

Contact 3M for more information.

CALIFORNIA PROPOSITION 65

<u>Ingredient</u>	<u>C.A.S. No.</u>	<u>Classification</u>
Carbon Black	1333-86-4	**Carcinogen
Toluene	108-88-3	*Developmental Toxin

* WARNING: contains a chemical or chemicals which can cause birth defects or other reproductive harm.

** WARNING: contains a chemical which can cause cancer.

CHEMICAL INVENTORIES

The components of this product are in compliance with the chemical notification requirements of TSCA.

All applicable chemical ingredients in this material are listed on the European Inventory of Existing Chemical Substances (EINECS), or are exempt polymers whose monomers are listed on EINECS.

Contact 3M for more information.

INTERNATIONAL REGULATIONS

Contact 3M for more information.

This MSDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: OTHER INFORMATION

NFPA Hazard Classification

Health: 2 Flammability: 3 Reactivity: 0 Special Hazards: None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

Revision Changes:

Section 1: Product name was modified.
Section 1: Product use information was modified.
Section 1: Division name was modified.
Copyright was modified.
Section 3: Potential effects from eye contact was modified.
Section 3: Potential effects from inhalation information was modified.
Section 7: Handling information was modified.
Section 8: Engineering controls information was modified.
Section 8: Prevention of swallowing information was modified.
Section 3: Other health effects information was modified.
Page Heading: Product name was modified.
Section 9: Property description for optional properties was modified.
Section 9: Specific gravity information was modified.
Section 9: Density information was added.
Section 14: ID Number Heading Template 1 was added.
Section 14: ID Number(s) Template 1 was added.
Section 2: Ingredient table was added.
Section 15: TSCA section 12[b] text was added.
Section 15: EPCRA 313 information was added.
Section 15: EPCRA 313 text was added.
Section 8: Exposure guidelines ingredient information was added.
Section 8: Exposure guidelines legend was added.
Section 8: Exposure guideline note was added.
Section 15: TSCA section 12[b] information was added.
Section 8: Exposure guidelines data source legend was added.
Section 3: Carcinogenicity table was added.
Section 3: Carcinogenicity heading was added.
Section 15: California proposition 65 ingredient information was added.
Section 15: California proposition 65 heading was added.
Section 15: California proposition 65 cancer warning was added.

DISCLAIMER: The information in this Material Safety Data Sheet (MSDS) is believed to be correct as of the date issued. 3M MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of use or application. Given the variety of factors that can affect the use and application of a 3M product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for user's method of use or application.

3M provides information in electronic form as a service to its customers. Due to the remote possibility that electronic transfer may have resulted in errors, omissions or alterations in this information, 3M makes no representations as to its completeness or accuracy. In addition, information obtained from a database may not be as current as the information in the MSDS available directly from 3M.

3M MSDSs are available at www.3M.com

SAFETY DATA SHEET



RUST PREVENT SYN 3-X

Section 1. Identification

GHS product identifier : RUST PREVENT SYN 3-X
Product code : 11640100, 11640330, 11640470
SDS # : MS0100704
Other means of identification : Not available.
Product type : Liquid.

Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Water-soluble synthetic rust inhibitor and grinding fluid
Supplier/Manufacturer : DuBois Chemicals, Inc. DuBois Chemicals Canada, Inc.
3630 E. Kemper Road 1155 North Service Road West
Cincinnati, Ohio 45241 Unit 6
Phone: 1-800-438-2647 Oakville, Ontario, L6M 3E3 Canada
Phone: 1-866-861-3603
Emergency telephone number : 1-866-923-4919 (US and Canada)
01-651-523-0314 (Int'l and Mexico)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : SKIN CORROSION/IRRITATION - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2

GHS label elements

Hazard pictograms :



Signal word : Warning

Hazard statements : Causes serious eye irritation.
Causes skin irritation.

Precautionary statements

Prevention : Wear eye/face protection. Wear protective gloves. Wash hands thoroughly after handling.

Response : IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Not applicable.

Disposal : Not applicable.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Ingredient name	%	CAS number
2-aminoethanol	1 - 5	141-43-5

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : Causes skin irritation.
- Ingestion** : Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:
irritation
redness
- Ingestion** : No specific data.

Section 4. First aid measures

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
phosphorus oxides
metal oxide/oxides

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	CAS #	ACGIH	OSHA	Mexico
2-aminoethanol	141-43-5	TWA: 3 ppm 8 hours. TWA: 7.5 mg/m ³ 8 hours. STEL: 6 ppm 15 minutes. STEL: 15 mg/m ³ 15 minutes.	TWA: 3 ppm 8 hours. TWA: 6 mg/m ³ 8 hours.	LMPE-PPT: 3 ppm 8 hours. LMPE-PPT: 8 mg/m ³ 8 hours. LMPE-CT: 15 mg/m ³ 15 minutes. LMPE-CT: 6 ppm 15 minutes.

- Engineering measures** : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Personal protection**
- Respiratory** : If a risk assessment indicates this is necessary, use a properly fitted, air-purifying or airfed respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. Recommended: splash goggles
- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Section 8. Exposure controls/personal protection

Personal protective
equipment (Pictograms)



Section 9. Physical and chemical properties

Appearance

Physical state	: Liquid.
Color	: Amber.
Odor	: Not available.
Odor threshold	: Not available.
pH	: 10.5
Melting point	: Not available.
Boiling point	: Not available.
Flash point	: Closed cup: >93.3°C (>199.9°F) [Tagliabue (ASTM D56)]
Burning time	: Not applicable.
Burning rate	: Not applicable.
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: Not available.
Relative density	: 1.16
Solubility	: Easily soluble in the following materials: cold water and hot water.
Solubility in water	: Not available.
Partition coefficient: n- octanol/water	: Not available.
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: Not available.
Elemental Phosphorus	: 1.01 %
VOC content	: 2.01 %

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.
Incompatible materials	: Extremely reactive or incompatible with the following materials: oxidizing materials.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 10. Stability and reactivity

Storage : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 11. Toxicological information

Information on toxicological effects

Information on the likely routes of exposure : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

Eye contact : Causes serious eye irritation.
Inhalation : Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
Skin contact : Causes skin irritation.
Ingestion : Irritating to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
 pain or irritation
 watering
 redness
Inhalation : No specific data.
Skin contact : Adverse symptoms may include the following:
 irritation
 redness
Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.
Carcinogenicity : No known significant effects or critical hazards.
Mutagenicity : No known significant effects or critical hazards.
Teratogenicity : No known significant effects or critical hazards.
Developmental effects : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Section 11. Toxicological information

route	ATE value
Oral	85572.1 mg/kg
Dermal	54726.4 mg/kg
Inhalation (vapors)	547.3 mg/l

Section 12. Ecological information

Ecotoxicity : Not available.

Aquatic ecotoxicity

Not available.

Section 13. Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

IATA/IMDG/DOT/TDG: Please refer to the Bill of Lading/receiving documents for up to date shipping information.

Section 15. Regulatory information

U.S. Federal regulations : TSCA 12(b) one-time export: No products were found.
 TSCA 12(b) annual export notification: No products were found.
 United States inventory (TSCA 8b): All components are listed or exempted.

EPA Registration Number : Not available.

Clean Air Act Section 112 : Not listed

(b) Hazardous Air Pollutants (HAPs)

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Immediate (acute) health hazard

State regulations

Massachusetts : The following components are listed: ETHANOLAMINE

New York : None of the components are listed.

New Jersey : The following components are listed: ETHANOLAMINE; ETHANOL, 2-AMINO-

Pennsylvania : The following components are listed: ETHANOL, 2-AMINO-

California Prop. 65

Not available.

Canada

Canadian lists

Canadian NPRI : The following components are listed: Phosphorus (total)

Section 15. Regulatory information

Canada inventory : All components are listed or exempted.

Canadian PCP/DIN Number : Not available.

International regulations

International lists :

- Australia inventory (AICS)**: All components are listed or exempted.
- China inventory (IECSC)**: All components are listed or exempted.
- Japan inventory**: Not determined.
- Korea inventory**: All components are listed or exempted.
- Malaysia Inventory (EHS Register)**: Not determined.
- New Zealand Inventory of Chemicals (NZIoC)**: All components are listed or exempted.
- Philippines inventory (PICCS)**: All components are listed or exempted.
- Taiwan inventory (CSNN)**: Not determined.

Section 16. Other information

History

Date of printing : 7/17/2015.

Date of issue/Date of revision : 7/17/2015.

Date of previous issue : 10/23/2014.

Version : 2

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Product Information

MATERIAL SAFETY DATA SHEET

HMIS Hazard Rating



MAINTENANCE LIMITED
P.O. Box 3000, Peterborough, Ontario Canada K9J 8N4
Telephone (705) 745-5763 1-800-461-7695

Product Name: Quatro 15

Product Use: Disinfectant/Cleaner

Emergency Tel: Canutec (613) 996-6666

Hazardous Ingredients

- Ingredients: Alcohol ethoxy/late, Tetrasodium ethylenediaminetetraacetate, Sodium metasilicate, Alkyl(C12-18) dimethyl benzyl ammonium chloride, Alkyl(C12-14) dimethyl ethylbenzyl ammonium chloride

Physical Data

- Appearance and odour: Red; fruity
Vapour pressure (mm Hg): NE
Vapour density (Air=1): NE
Solubility in water (20°C): Soluble
Physical state: Liquid
Boiling point (°C): NE
Freezing point (°C): NE
Specific gravity (Water=1): 1.068
% Volatile (WT %): 84
Evaporation rate (Water=1): NE
pH (as supplied): 13.00
Odour threshold (ppm): NE
Coefficient of water/oil distribution: NE
Viscosity: Water thin.

Fire and Explosion Data

- Flammability: Not flammable
Flashpoint (°C, TCC): None
UEL: NE
Hazardous combustion products: May include and are not limited to ammonia, oxides of carbon and nitrogen.
Means of extinction: Dry chemical, carbon dioxide, alcohol foam.
Special fire hazards: Firefighters should wear self-contained breathing apparatus.
Explosion Data -- sensitivity to mechanical impact: NE
Explosion Data -- sensitivity to static discharge: NE

NA = Not Available

Table with 3 columns: CAS#, WT%, and NA = Not Available. Rows include 34398-01-1, 64-402-8, 6834-492-0, 68391-01-5, 85409-23-0.

Reactivity Data

Conditions for chemical instability: Stable
Incompatible materials: Strong oxidizing agents and strong acids.
Conditions of reactivity: NE
Hazardous decomposition products: May include and are not limited to ammonia, oxides of carbon and nitrogen when heated to decomposition.

First Aid

Eye: Flush eyes with large amount of water for 15 minutes while holding eyelids open. If irritation occurs or persists, seek medical attention.
Skin: Wash skin with soap and water. If irritation develops, seek medical attention.
Completely clean clothing, shoes and leather goods before reuse or discard.
Inhalation: If affected, remove to fresh air immediately. If symptoms persist, seek medical attention.
Ingestion: Do not induce vomiting. Rinse mouth with water, then drink one glass of water. Contact a doctor. Never give anything by mouth if victim is unconscious, is rapidly losing consciousness or is convulsing.

(8915)

Table with 2 columns: Hazard Category and Rating. Rows include HEALTH (2), FLAMMABILITY (0), REACTIVITY (0), PERSONAL PROTECTION (B).

NE = Not Established

Table with 2 columns: ACGIH-TLV and LD50. Rows include >2,000 mg/kg (Oral, Rat), 1,658 mg/kg (Oral, Rat), 1,153 mg/kg (Oral, Rat), 50-500 mg/kg (Oral, Rat), 50-500 mg/kg (Oral, Rat).

Preventive Measures

Gloves: Use impervious gloves
Eye protection: Use safety glasses.
Respiratory protection: Not normally required if good ventilation is maintained.
Other protective equipment: As required by employer code.
Engineering control: General ventilation normally adequate.
Leak and spill procedure: Before attempting clean up, consult MSDS. Small spills may be absorbed with non-reactive material absorbent and placed in suitable, covered, labeled containers. Remove traces by flushing with water to a chemical sewer. Prevent large spills from entering sewers or waterways. Consult emergency services and supplier for advice.
Waste disposal: Review or contact local, provincial and federal authorities for disposal methods.

Toxicological Information

Route of Entry: Eye, Skin, Inhalation, Ingestion
Effects of Acute Exposure:
Eye contact: May cause severe irritation, reddening and swelling of tissues around eyes.
Skin: May cause moderate to high irritation.
Skin absorption: NE
Inhalation: May cause nose, throat and respiratory tract irritation and coughing, headache.
Ingestion: May cause stomach distress, nausea or vomiting.
Effects of Chronic Exposure:
Skin: Prolonged or repeated exposure may cause skin drying, dermatitis and dermatitis.
Irritation: Non-hazardous by WHMIS criteria.
Sensitization to product: None known.
Carcinogenicity: None known.
Teratogenicity, Mutagenicity, Reproductive effects: NE
Toxicological synergistic products: NA

Storage & handling requirements: KEEP OUT OF REACH OF CHILDREN. Keep in a closed, labeled container. Store in a cool, dry, well-ventilated area away from incompatible materials.

Special shipping information: Do not freeze.

Regulatory Information

TDG Pin/Class: Corrosive Liquids, N.O.S. (Sodium Silicate)
Class 8 UN 1760 PG III
WHMIS Class: Registered drug product.
SARA Title III: NE

Preparation Information

Prepared By: Charlotte Products Technical Services
Date: May 16, 2014 Tel: (705) 740-2880

Disclaimer: Information for this material safety data sheet was obtained from sources considered technically accurate and reliable. While every effort has been made to ensure full disclosure of product hazards, in some cases data is not available and it is so stated. Since conditions of actual product use are beyond control of this supplier, it is assumed that users of this material have been fully trained according to the mandatory requirements of WHMIS. No warranty, expressed or implied, is made and supplier will not be liable for any losses, injuries or consequential damages which may result from the use of, or reliance on, any information contained within this form. If you require more information on ingredients in this or any other material, we recommend contact with the Canadian Centre for Occupational Safety and Health (CCOHS) in Hamilton, Ontario (1-800-265-8469) or CCOHS in Montreal, Quebec (514-873-3999).

98-01959-6 / 98-14436-6

Material Safety Data Sheet



PRECISION ^{TM/MC} XL EP2

000003000891

Version 3.0

Revision Date 2015/09/15

Print Date 2015/09/15

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : PRECISION ^{TM/MC} XL EP2
Product code : PXL2P17, PXL2KGL, PXL2DRL, PXL2CBG, PXL2C30, PXL2, PXL2BLK

Manufacturer or supplier's details
Petro-Canada Lubricants Inc.
2310 Lakeshore Road West
Mississauga ON L5J 1K2
Canada

Emergency telephone number
Suncor Energy: +1 403-296-3000;
Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : PRECISION XL EP greases are high performance, long life, EP greases designed for trouble-free lubrication of a wide range of automotive and industrial equipment.

Prepared by : Product Safety: +1 905-804-4752

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Table with 2 columns: Property (Appearance, Colour, Odour) and Description (Stringy, smooth, semi-solid; green; Mild grease like).

Potential Health Effects

Primary Routes of Entry : Eye contact, Ingestion, Inhalation, Skin contact

Aggravated Medical Condition : None known.

Carcinogenicity:

IARC No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH No component of this product present at levels greater than or

Material Safety Data Sheet

PRECISION ^{TIM/MC} **XL EP2**

000003000891

Version 3.0

Revision Date 2015/09/15

Print Date 2015/09/15



equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical Name	CAS-No.	Concentration (%)
Paraffin oils	8012-95-1	70 - 90 %
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity	72623-85-9	30 - 50 %
distillates (petroleum), solvent-dewaxed heavy paraffinic	64742-65-0	10 - 20 %
Long-chain alkyl amine		0.1 - 1 %

SECTION 4. FIRST AID MEASURES

- If inhaled : Move to fresh air.
Artificial respiration and/or oxygen may be necessary.
Seek medical advice.
- In case of skin contact : In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash skin thoroughly with soap and water or use recognized skin cleanser.
Wash clothing before reuse.
Seek medical advice.
In the event of a known, or potential, high pressure injection injury, worker should obtain immediate medical evaluation.
- In case of eye contact : Remove contact lenses.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Obtain medical attention.
- If swallowed : Rinse mouth with water.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Never give anything by mouth to an unconscious person.
Seek medical advice.
- Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

Material Safety Data Sheet

PRECISION^{TM/MC} XL EP2

000003000891



Version 3.0

Revision Date 2015/09/15

Print Date 2015/09/15

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : No information available.
- Specific hazards during firefighting : Cool closed containers exposed to fire with water spray.
- Hazardous combustion products : Carbon oxides (CO, CO₂), sulphur oxides (SO_x), nitrogen oxides (NO_x), phosphorus oxides (PO_x), sulphur compounds (H₂S), calcium oxides (CaO_x), antimony oxides (SbO_x), potassium oxide, aldehydes, sulfides, alkyl mercaptans, diphenylamine, alkenes, smoke and irritating vapours as products of incomplete combustion.
- Further information : Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Material can create slippery conditions.
- Environmental precautions : If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods and materials for containment and cleaning up : Prevent further leakage or spillage if safe to do so.
Remove all sources of ignition.
Soak up with inert absorbent material.
Non-sparking tools should be used.
Ensure adequate ventilation.
Contact the proper local authorities.

SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid contact with skin, eyes and clothing.
Do not ingest.
Keep away from heat and sources of ignition.
Keep container closed when not in use.
- Conditions for safe storage : Store in original container.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Material Safety Data Sheet

PRECISION ^{TM/MC} **XL EP2**

000003000891

Version 3.0

Revision Date 2015/09/15

Print Date 2015/09/15



Keep in a dry, cool and well-ventilated place.
Keep in properly labelled containers.
To maintain product quality, do not store in heat or direct sunlight.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Engineering measures : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type : organic vapour filter

Hand protection

Material : neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R) .

Remarks : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Eye protection : Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Protective measures : Wash hands and face before breaks and immediately after handling the product.
Wash contaminated clothing before re-use.
Ensure that eyewash station and safety shower are proximal to the work-station location.

Hygiene measures : Wash face, hands and any exposed skin thoroughly after handling.
Remove and wash contaminated clothing and gloves, including the inside, before re-use.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Material Safety Data Sheet

PRECISION^{TM/MC} XL EP2

000003000891



Version 3.0

Revision Date 2015/09/15

Print Date 2015/09/15

Appearance	: Stringy, smooth, semi-solid.
Colour	: green
Odour	: Mild grease like.
Odour Threshold	: No data available
pH	: No data available
Pour point	: -12 °C (10 °F) Mineral Oil Blend
Boiling point/boiling range	: No data available
Flash point	: 290 °C (554 °F) Method: Cleveland open cup Mineral Oil Blend
Fire Point	: 300 °C (572 °F) Mineral Oil Blend
Auto-Ignition Temperature	: No data available
Evaporation rate	: No data available
Flammability	: Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available
Density	: 0.9083 kg/l (15 °C / 59 °F)
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: 219.9 cSt (40 °C / 104 °F) Mineral Oil Blend 17.9 cSt (100 °C / 212 °F) Mineral Oil Blend
Explosive properties	: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	: No data available
Incompatible materials	: Reactive with oxidising agents, reducing agents, acids and

Material Safety Data Sheet

PRECISION ^{TM/MC} **XL EP2**

000003000891

Version 3.0

Revision Date 2015/09/15

Print Date 2015/09/15



alkalis.

Hazardous decomposition products : May release COx, NOx, SOx, POx, H2S, CaOx, SbOx, KOx, aldehydes, sulfides, alkyl mercaptans, diphenylamine, alkenes, ammonia, metal oxides, halogenated compounds, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : Eye contact
Ingestion
Inhalation
Skin contact

Acute toxicity

Product:

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

Components:

lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity:

Acute oral toxicity : LD50 Rat: > 5,000 mg/kg,

Acute inhalation toxicity : LC50 Rat: > 5.2 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 Rabbit: > 2,000 mg/kg,

distillates (petroleum), solvent-dewaxed heavy paraffinic:

Acute oral toxicity : LD50 Rat: > 5,000 mg/kg,

Acute dermal toxicity : LD50 Rabbit: > 5,000 mg/kg,

Skin corrosion/irritation

Product:

Remarks: No data available

Components:

distillates (petroleum), solvent-dewaxed heavy paraffinic:

Result: No skin irritation

Serious eye damage/eye irritation

Product:

Material Safety Data Sheet

PRECISION^{TM/MC} XL EP2

000003000891



Version 3.0

Revision Date 2015/09/15

Print Date 2015/09/15

Remarks: No data available

Components:

distillates (petroleum), solvent-dewaxed heavy paraffinic:

Result: No eye irritation

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Aspiration toxicity

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Bioaccumulative potential

No data available

Material Safety Data Sheet

PRECISION ^{TM/MC} **XL EP2**

000003000891



Version 3.0

Revision Date 2015/09/15

Print Date 2015/09/15

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues

: The product should not be allowed to enter drains, water courses or the soil.
Offer surplus and non-recyclable solutions to a licensed disposal company.
Waste must be classified and labelled prior to recycling or disposal.
Send to a licensed waste management company.
Dispose of as hazardous waste in compliance with local and national regulations.
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulation

IATA-DGR

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

49 CFR

Not regulated as a dangerous good

TDG

Not regulated as a dangerous good

Special precautions for user

Not applicable

SECTION 15. REGULATORY INFORMATION

WHMIS Classification : Not controlled.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

The components of this product are reported in the following inventories:

DSL

On the inventory, or in compliance with the inventory

TSCA

All chemical substances in this product are either listed on the

Material Safety Data Sheet

PRECISION^{TM/MC} XL EP2

000003000891



Version 3.0

Revision Date 2015/09/15

Print Date 2015/09/15

ELINCS

TSCA Inventory or are in compliance with a TSCA Inventory exemption.

At least one component is not listed in EINECS but all such components are listed in ELINCS.

SECTION 16. OTHER INFORMATION

For Copy of (M)SDS

: The Canadian Controlled Products Regulations (CPR) (Under the Hazardous Products Act, part of the WHMIS legislation) only apply to WHMIS Controlled (i.e., hazardous) products. Therefore, the CPR and the 3-year update rule specified therein do not apply to WHMIS Non-Controlled products. Although this is true, customarily Petro-Canada reviews and updates Non-Controlled product MSDS if a customer requests such an update. These Non-Controlled product updates are given a lower priority than Controlled products but are handled as soon as practicable. If you would like to verify if the MSDS you have is the most current, or you require any further information, please contact:

Internet: lubricants.petro-canada.ca/msds

Western Canada, telephone: 1-800-661-1199; fax: 1-800-378-4518

Ontario & Central Canada, telephone: 1-800-268-5850; fax: 1-800-201-6285

Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 1-800-201-6285

For Product Safety Information: 1 905-804-4752

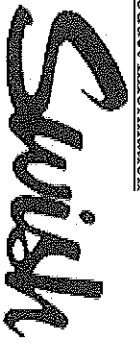
Prepared by

: Product Safety: +1 905-804-4752

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Product Information

NON



MAINTENANCE LIMITED
P.O. Box 3000, Peterborough, Ontario Canada K9J 8N4
Telephone (705) 745-5763, 1-800-461-7695

Product Name: Powerhouse Spray & Wipe Cleaner

Product Use: General Cleaner

Emergency Tel: Canutec (613) 996-6666

Hazardous Ingredients

- Propylene glycol n-butyl ether
- Propylene glycol n-propyl ether
- Monethanolamine

MATERIAL SAFETY DATA SHEET

HMIS Hazard Rating

HEALTH	2	0 - Insignificant
FLAMMABILITY	0	1 - Slight
REACTIVITY	0	2 - Moderate
PERSONAL PROTECTION	B	3 - High
		4 - Extreme

(4071)

NA = Not Available

CAS#	WT%
5131-66-8	3-7
1569-01-3	3-7
141-43-5	1-5

ACGIH-TLV

- NA
- NA
- 3 ppm TWA

NE = Not Established

LD₅₀

- 2,700 mg/kg (Oral, Rat)
- 2,519 mg/kg (Oral, Rat)
- 1,720 mg/kg (Oral, Rat)

LC₅₀

- >651 ppm 4 hrs. Rat
- >2,230 ppm 6 hrs. Rat
- NA



Physical Data

- Appearance and odour: Red, peppermint.
- Vapour pressure (mm Hg): NE
- Vapour density (Air=1): NE
- Solubility in water (20°C): Soluble
- Physical state: Liquid
- Boiling point (°C): NE
- Freezing point (°C): NE
- Specific gravity (Water=1): 1.001
- % Volatile (Wt %): 97
- Evaporation rate (Water=1): NE
- pH (as supplied): 11.55
- Odour threshold (ppm): NE
- Coefficient of water/oil distribution: NE
- Viscosity: Water thin.

Fire and Explosion Data

- Flammability: Not Flammable
- Flashpoint (°C, TCC): None
- LEL: NE
- UEL: NE
- Hazardous combustion products: May include and are not limited to oxides of carbon and nitrogen.
- Means of extinction: Dry chemical, carbon dioxide, alcohol foam.
- Special fire hazards: Firefighters should wear self-contained breathing apparatus.
- Explosion Data - sensitivity to mechanical impact: NE
- Explosion Data - sensitivity to static discharge: NE

Reactivity Data

- Conditions for chemical instability: Stable
- Incompatible materials: Strong oxidizing agents and strong acids.
- Conditions of reactivity: NE
- Hazardous decomposition products: May include and are not limited to oxides of carbon and nitrogen when heated to decomposition.

First Aid

- Eye: Flush eyes with large amount of water for 15 minutes while holding eyelids open. If irritation occurs or persists, seek medical attention.
- Skin: Wash skin with soap and water. If irritation develops, seek medical attention. Completely clean clothing, shoes and leather goods before reuse or discard.
- Inhalation: If affected, remove to fresh air immediately. If symptoms persist, seek medical attention.
- Ingestion: Do not induce vomiting. Rinse mouth with water; then drink one glass of water. Contact a doctor. Never give anything by mouth if victim is unconscious, is rapidly losing consciousness or is convulsing.

Preventive Measures

- Gloves: Latex, neoprene, nitrile, rubber. Confirm with a reputable supplier first.
- Eye protection: Safety glasses.
- Respiratory protection: Not normally required if good ventilation is maintained.
- Other protective equipment: As required by employer code.
- Engineering control: General ventilation normally adequate. Local exhaust for dust, mists or fumes.
- Leak and spill procedure: Before attempting clean up, consult MSDS. Small spills may be absorbed with non-reactive material absorbent and placed in suitable, covered, labeled containers. Prevent large spills from entering sewers or waterways. Consult emergency services or supplier for advice.
- Waste disposal: Review or contact local, provincial and federal authorities for disposal methods.
- Storage & handling requirements: KEEP OUT OF REACH OF CHILDREN. Keep in a closed, labeled container. Store in a cool, dry, well-ventilated area away from incompatible materials.
- Special shipping information: Do not freeze.

Toxicological Information

- Route of Entry: Eye, Skin Contact, Inhalation, Ingestion
- Effects of Acute Exposure:
 - Eye contact: May cause irritation.
 - Skin contact: May cause irritation.
 - Skin absorption: NE
- Inhalation: May cause respiratory tract irritation and coughing, headache.
- Ingestion: May cause stomach distress, nausea or vomiting.
- Effects of Chronic Exposure:
 - Skin: Prolonged exposure may cause skin drying, defatting and dermatitis.
 - Irritancy: Hazardous by WHMIS criteria.
 - Sensitization to product: None known.
 - Carcinogenicity: None known.
 - Teratogenicity, Mutagenicity, Reproductive effects: NE
 - Toxicological synergistic products: NA

Regulatory Information

- TDG Pin/Class: Not regulated under TDG.
- WHMIS Class: F
- SARA Title III: NE

Preparation Information

- Prepared By: Charlotte Products Technical Services
- Date: May 16, 2014
- Tel: (705) 740-2880

Disclaimer: Information for this material safety data sheet was obtained from sources considered technically accurate and reliable. While every effort has been made to ensure full disclosure of product hazards, in some cases data is not available and is so stated. Since conditions of actual product use are beyond control of this supplier, it is assumed that users of this material have been fully trained accordingly to the mandatory requirements of WHMIS. No warranty, expressed or implied, is made and supplier will not be liable for any losses, injuries or consequential damages which may result from the use of, or reliance on, any information contained within this form. If you require independent information on ingredients in this or any other material, we recommend contact with the Canadian Centre for Occupational Health and Safety (CCOHS) in Hamilton, Ontario (1-800-263-9469) or CCST in Montreal, Quebec (514-873-3990).

NONE.

Product Name: Oxygen

MSDS No.: E-4638-J

Date: Oct. 15, 2013

Praxair Material Safety Data Sheet

1. Chemical Product and Company Identification

Product Name: Oxygen	Trade Name: Oxygen, Medipure®
Product Use: Many.	
Chemical Name: Oxygen	Synonym: Dioxygen
Chemical Formula: O ₂	Chemical Family: Permanent Gas.
Telephone: Emergencies: * 1-800-363-0042	Supplier /Manufacture: Praxair Canada Inc. 1 City Centre Drive Suite 1200 Mississauga, ON L5B 1M2
	Phone: 905-803-1600 Fax: 905-803-1682

**Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier or Praxair sales representative.*

2. Hazards Identification

Emergency Overview

WARNING! High pressure, oxidizing gas. Vigorously accelerates combustion. Self-contained breathing apparatus may be required by rescue workers.

ROUTES OF EXPOSURE: Inhalation.

EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:

INHALATION: Breathing 80% or more oxygen at atmospheric pressure for more than a few hours may cause nasal stuffiness, cough, sore throat, chest pain and breathing difficulty. Breathing oxygen at higher pressure increases the likelihood of adverse effects within a shorter time period. Breathing pure oxygen under pressure may cause lung damage and also central nervous system effects resulting in dizziness, poor coordination, tingling sensation, visual and hearing disturbances, muscular twitching, unconsciousness and convulsions. Breathing of oxygen under pressure may cause prolongation of adaptation to darkness and reduced peripheral vision.

SKIN CONTACT: No harm expected.

SKIN ABSORPTION: No evidence of adverse effects from available information.

SWALLOWING: This product is a gas at normal temperature and pressure.

EYE CONTACT: No evidence of adverse effects from available information.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE:

No evidence of adverse effects from available information.

OTHER EFFECTS OF OVEREXPOSURE:

See "Notes to Physician", in the "First Aid" section.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

See "Notes to Physician", in the "First Aid" section.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:

None currently known.

CARCINOGENICITY:

Not listed as carcinogen by OSHA, NTP or IARC.

3. Composition and Information on Ingredients
--

COMPONENTS	CAS NUMBER	CONCENTRATION % by Mole
Oxygen	7782-44-7	100

4. First Aid Measures

INHALATION:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. Keep patient warm and at rest. Get medical attention. Advise the physician that the victim has been exposed to high concentration of oxygen.

SKIN CONTACT:

No harm expected.

SWALLOWING:

This product is a gas at normal temperature and pressure.

EYE CONTACT:

No harm expected.

NOTES TO PHYSICIAN:

Supportive treatment should include immediate sedation, anti-convulsive therapy if needed, and rest. Animal studies suggest that the administration of certain drugs, including phenothiazine drugs and chloroquine, increase the susceptibility to toxicity from oxygen at high concentrations or pressures. Animal studies also indicate that vitamin E deficiency may increase susceptibility to oxygen toxicity. Airway obstruction during high oxygen tension may cause alveolar collapse following absorption of the oxygen. Similarly, occlusion of the eustachian tubes may cause retraction of the eardrum and obstruction of the paranasal sinuses may produce "vacuum-type" headache. Newborn premature infants exposed to high oxygen concentrations may suffer delayed retinal damage, which can progress, to retinal detachment and blindness (retrolental fibroplasia). Retinal damage can also occur in adults exposed to 100% oxygen under greater than atmospheric pressure, particularly in individuals whose retinal circulation has been previously compromised.

All individuals exposed for only periods to oxygen at high pressure and all that exhibit overt oxygen toxicity should have ophthalmologic examination.

5. Fire Fighting Measures

FLAMMABLE : No.	IF YES, UNDER WHAT CONDITIONS?	Vigorously accelerates combustion.
------------------------	---------------------------------------	------------------------------------

EXTINGUISHING MEDIA:

Vigorously accelerates combustion. Use media appropriate for surrounding fire. Water (i.e., safety shower) is the preferred extinguishing media for clothing fires.

PRODUCTS OF COMBUSTION:

None.

PROTECTION OF FIREFIGHTERS:

WARNING! Evacuate all personnel from danger area. Immediately deluge cylinders with water from maximum distance until cool; then move them away from fire area if without risk.

SPECIFIC PHYSICAL AND CHEMICAL HAZARDS:

Oxidizing agent, vigorously accelerates combustion. Contact with flammable materials may cause fire or explosion. Container may rupture due to heat of fire. Vapours are extremely irritating. Contact may cause burns to skin and eyes. No part of a container should be subjected to a temperature higher than 52 C. See incompatibility in Section 10. Most containers are provided with a pressure relief device designed to vent contents when they are exposed to elevated temperature. Smoking, flames and electric sparks in the presence of enriched oxygen atmospheres are potential explosion hazards.

SENSITIVITY TO IMPACT:

Avoid impact against container.

SENSITIVITY TO STATIC DISCHARGE:

Not applicable.

PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS:

Firefighters should wear self-contained breathing apparatus and full fire-fighting turnout gear.

FLAMMABLE LIMITS IN AIR, % by volume:

LOWER: Not applicable.

UPPER: Not applicable.

FLASH POINT:

Not applicable.

AUTOIGNITION TEMPERATURE:

Not applicable.

6. Accidental Release Measures

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**Personal Precautions:**

WARNING! Shut off flow if you can do so without risk. Ventilate area or move cylinder to a well-ventilated area. Remove all flammable materials from vicinity. Oxygen must never be permitted to strike an oily surface, greasy clothes, or other combustible material.

Environmental Precautions:

Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, provincial, and local regulations. If necessary call your local supplier.

7. Handling and Storage

PRECAUTIONS TO BE TAKEN IN HANDLING:

Use piping and equipment adequately designed to withstand pressures to be encountered. Ground all equipment. Store and use with adequate ventilation at all times. Use only in a closed system constructed of corrosion resistant materials. NOTE: Reverse flow into cylinder may cause rupture. Use a check valve or other protective apparatus in any lines or piping from the cylinder to prevent reverse flow. For additional information refer to CGA pamphlet P-1. (See section 16 for more details).

WHEN USED IN WELDING AND CUTTING: Read and understand the manufacturer's instructions and the precautionary label on the product. See American Standard Z49.1 "Safety in Welding and Cutting" published by the American Welding Society, P.O. Box 351040, Miami, Florida, 33135.

Note: Suitability for use as a component in underwater breathing gas mixtures is to be determined by or under the

supervision of personnel experienced in the use of underwater breathing gas mixtures. Become familiar with the effects, methods, frequency and duration of use, hazards, side effects and precautions to be taken.

PRECAUTIONS TO BE TAKEN IN STORAGE:

Store and use with adequate ventilation. Separate flammable cylinders from oxygen, chlorine, and other oxidizers by at least 6 m or use a barricade of non-combustible material. This barricade should be at least 1.5 m high and have a fire resistance rating of at least ½ hour. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Post "No Smoking or Open Flames" signs in storage and use areas. There must be no sources of ignition. All electrical equipment in storage areas must be explosion-proof. Storage areas must meet national electric codes for Class 1 hazardous areas. Store only where temperature will not exceed 52 C. Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods. For additional information refer to CGA pamphlet P-2305(for welding and cutting). See section 16.

OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE:

High-pressure, oxidizing gas. Use piping and equipment adequately designed to withstand pressures to be encountered. **Vigorously accelerates combustion.** Keep oil, grease, and combustibles away. **Store and use with adequate ventilation at all times.** Close valve after each use; keep closed even when empty. **Prevent reverse flow.** Reverse flow into cylinder may cause rupture. Use a check valve or other protective device in any line or piping from the cylinder. **When returning cylinder to supplier, be sure valve is closed, then install valve outlet plug tightly. Never work on a pressurized system.** If there is a leak, close the cylinder valve. Vent the system down in a safe and environmentally sound manner in compliance with all federal, provincial, and local laws; then repair the leak. **Never place a compressed gas cylinder where it may become part of an electrical circuit.**

RECOMMENDED PUBLICATIONS:

Additional information on storage, handling, and use of this product is provided in **NFPA 55: Standard for the Storage, Use, and Handling of Compressed and Liquefied Gases in Portable Cylinders**, published by the National Fire Protection Association.

See also Praxair publication P-14-153, *Guidelines for Handling Gas Cylinders and Containers*. Obtain from your local supplier.

8. Exposure Controls/Personal Protection

INGREDIENTS	CAS NUMBER	LD ₅₀ (Species & Routes)	LC ₅₀ (Rat, 4 hrs.)	Exposure Limits
Oxygen	7782-44-7	Not applicable.	Not applicable.	None.

IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH):

VENTILATION/ENGINEERING CONTROLS:

LOCAL EXHAUST: Use a local exhaust system, if necessary, to prevent increased oxygen concentration and, in welding, to keep hazardous fumes and gases below applicable TLVs in the worker's breathing zone.

MECHANICAL (General): General exhaust ventilation may be acceptable if it can maintain a supply of air that is not too rich in oxygen an, during welding, can keep hazardous fumes and gases below the applicable TLVs in the worker's breathing zone.

SPECIAL: None.

OTHER: None.

PERSONAL PROTECTION:

RESPIRATORY PROTECTION: None required under normal use. However, air-supplied respirators are required while working in confined spaces with this product. For welding, use air-purifying or air-supplied respirators, as appropriate, where local or general exhaust ventilation is inadequate. Adequate ventilation must keep worker exposure below applicable TLVs for fumes, gases and other by-products of welding with oxygen. Selection should be based on the current CSA standard Z94.4, "Selection, Care, and Use of Respirators". Respirators should be approved by NIOSH and MSHA.

SKIN PROTECTION: Wear work gloves when handling cylinders.

EYE PROTECTION: Wear safety glasses when handling cylinders.

Select in accordance with the current CSA standard Z94.3, "Industrial Eye and Face Protection", and any provincial regulations, local bylaws or guidelines.

OTHER PROTECTIVE EQUIPMENT: Metatarsal shoes for cylinder handling. Protective clothing where needed. Cuffless trousers should be worn outside the shoes. Select in accordance with the current CSA standard Z195, "Protective Foot Wear", and any provincial regulations, local bylaws or guidelines.

9. Physical and Chemical Properties

PHYSICAL STATE: Gas.	FREEZING POINT: -218.78°C (-361.8°F)	pH:	Not applicable.
BOILING POINT: -182.96°C (-297.3°F)	VAPOUR PRESSURE: Not applicable.	MOLECULAR WEIGHT:	32 g/mole
SPECIFIC GRAVITY: LIQUID (Water = 1) Not applicable.	SOLUBILITY IN WATER: Negligible.		
SPECIFIC GRAVITY: VAPOUR (air = 1) 1.105 g/ml @ 21.10	EVAPORATION RATE (Butyl Acetate=1): Not applicable.	COEFFICIENT OF WATER/OIL DISTRIBUTION:	Not applicable.
VAPOUR DENSITY: 0.0013 g/ml @ 21.10	% VOLATILES BY VOLUME: 100% (v/v).	ODOUR THRESHOLD:	Odourless.
APPEARANCE & ODOUR: Colourless.		Odourless.	

10. Stability and Reactivity

STABILITY:	The product is stable.
CONDITIONS OF CHEMICAL INSTABILITY:	Compatibility with plastics should be confirmed prior to use.
INCOMPATIBILITY (materials to avoid):	Combustible materials, asphalt, flammable materials, especially oils and greases. Oxygen reacts with many materials.
HAZARDOUS DECOMPOSITION PRODUCTS:	None.
HAZARDOUS POLYMERIZATION:	Will not occur.

CONDITIONS TO AVOID:

None known.

CONDITIONS OF REACTIVITY:

None known.

11. Toxicological Information

ACUTE DOSE EFFECTS: The welding process may generate hazardous fumes and gases. See Sections 10 and 16 for additional information.

STUDY RESULTS:

At atmospheric concentration and pressure, oxygen poses no toxicity hazards. At high concentrations, newborn premature infants may suffer delayed retinal damage (retrolental fibroplasia) that can progress to retinal detachment and blindness. Retinal damage may also occur in adults exposed to 100% oxygen for extended periods (24 to 48 hours) or at greater than atmospheric pressure, particularly in individuals whose retinal circulation has been previously compromised. All individuals exposed for long periods to oxygen at high pressure and all who exhibit overt oxygen toxicity should have ophthalmologic examinations.

At two or more atmospheres, toxicity to the Central Nervous System (CNS) occurs. Symptoms include nausea, vomiting, dizziness or vertigo, muscle twitching, vision changes, and loss of consciousness and generalized seizures. At three atmospheres, CNS toxicity occurs in less than two hours; at six atmospheres, in only a few minutes.

Patients with chronic obstructive pulmonary disease retain carbon dioxide abnormally. If oxygen is administered, raising their blood oxygen concentration, their breathing becomes depressed and retained carbon dioxide rises to a dangerous level.

Animal studies suggest that the administration of certain drugs, including phenothiazine drugs and chloroquine, increases the susceptibility to toxicity from oxygen at high concentrations or pressures. Animal studies also indicate that vitamin E deficiency may increase susceptibility to oxygen toxicity.

Airway obstruction during high oxygen tension may cause alveolar collapse following absorption of the oxygen. Similarly, occlusion of the eustachians tubes may cause retraction of the eardrum and obstruction of the paranasal sinuses may produce vacuum-type headache.

12. Ecological Information

No adverse ecological effects expected. This product does not contain any Class I or Class II ozone-depleting chemicals. The components of this mixture are not listed as marine pollutants by TDG Regulations.

13. Disposal Considerations

WASTE DISPOSAL METHOD: Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier.

14. Transport Information

TDG/IMO SHIPPING NAME: Oxygen, Compressed

HAZARD CLASS: CLASS 2.2(5.1): Non-flammable, non-corrosive, non-toxic and oxidizing material

IDENTIFICATION #: UN1072

PRODUCT REPORTABLE QUANTITY (PRQ):
Any accidental release in a quantity that could pose a danger to public safety or any sustained release of 10 minutes or more.

SHIPPING LABEL(s): Special Oxidizer with Class 2 at bottom.

LACARD (When Required): Special Oxidizer with Class 2 at bottom.

SPECIAL SHIPPING INFORMATION:

Cylinders should be transported in a secure position, in a well-ventilated vehicle. Cylinders transported in an enclosed, non-ventilated compartment of a vehicle can present serious safety hazards.

15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, provincial, and local regulations. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS (Canada): CLASS A: Compressed gas.
CLASS C: Oxidizing material.

This product is on the DSL list.

International Regulations:

EINECS: Not available.

DSCL (EEC): R8- Contact with combustible material may cause fire.

International Lists: No products were found.

16. Other Information

MIXTURES:

When two or more gases, or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist, or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

HAZARD RATING SYSTEM:

HMIS RATINGS:

HEALTH 0

FLAMMABILITY 0

PHYSICAL HAZARD 3

STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:

THREADED: 0-3000 psig CGA-540
3001-4000 CGA-577
4001-5500 CGA-701

PIN-INDEXED YOKE: CGA-870

ULTRA-HIGH-INTEGRITY CONNECTION: CGA-714

Use the proper CGA connections. **DO NOT USE ADAPTERS.** Additional limited-standard connections may apply. See CGA pamphlets V-1 and V-7 listed below.

Ask your supplier about free Praxair safety literature as referred to in this MSDS and on the label for this product. Further information about this product can be found in the following pamphlets published by the Compressed Gas Association, Inc. (CGA), 4221 Walney Road, 5th Floor, Chantilly, VA 20151-2923, Telephone (703) 788-2700, Fax (703) 961-1831, website: www.cganet.com.

- AV-1 Safe Handling and Storage of Compressed Gases
- AV-8 Characteristics and Safe Handling of Cryogenic Liquid and Gaseous Oxygen
- G-4 Oxygen
- G-4.1 Cleaning Equipment for Oxygen Service
- G-4.3 Commodity Specification for Oxygen
- P-1 Safe Handling of Compressed Gases in Containers
- P-2 Characteristics and Safe Handling of Medical Gases
- P-14 Accident Prevention in Oxygen-Rich, Oxygen-Deficient Atmospheres
- SB-8 Use of Oxy-Fuel Gas Welding and Cutting Apparatus
- V-1 Compressed Gas Cylinder Valve Inlet and Outlet Connections
- Handbook of Compressed Gases, Fifth Edition

Praxair asks users of this product to study this MSDS and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this MSDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

PREPARATION INFORMATION:

DATE: October 15, 2013

DEPARTMENT: Safety and Environmental Services

TELEPHONE: 905-803-1600

The opinions expressed herein are those of qualified experts within Praxair Canada Inc. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of use of the product are not within the control of Praxair Canada Inc., it is the user's obligation to determine the conditions of safe use of the product.

Praxair Canada Inc. requests the users of this product to study this Material Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

*Praxair and the Flowing Airstream design are trademarks
of Praxair Canada Inc.*

Other trademarks used herein are trademarks or registered trademarks of their respective owners.



Praxair Canada Inc.
1 City Centre Drive
Suite 1200
Mississauga, ON L5B 1M2

MATERIAL SAFETY DATA SHEET

Page 1 of 4

Updated December 17, 2010

OPTISORB ABSORBENT**1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION****Product Name:** OPTISORB**Product use:** Absorbent**Product Advantages:** OPTISORB is highly absorbent and nonflammable. It absorbs liquids, including most oils, water, mixtures of soluble oils and water, grease, gas, acids, inks and paints.

Company Identification: Moltan Company.
 7125 Riverdale Bend Road
 Memphis, Tennessee
 800.264.5826 or 901-755-5666 (For Product Information)
 901.757.0546 fax
www.moltan.com

2. COMPOSITION / INFORMATION ON INGREDIENTS:

<u>Chemical Name</u>	<u>Percent</u>	<u>CAS Number</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>
Diatomaceous Earth	>99%	61760-53-2	Not Listed	Not Listed
Crystalline Silica (Quartz)	<1%	14808-60-7	0.1 mg/m ³	5 mg/m ³ /%SiO ₂ +2
Crystalline Silica (Cristobalite)	<1%	14464-46-1	0.05 mg/m ³	5 mg/m ³ /%SiO ₂ +2

Note: This product contains decomposed organic matter. The crystalline silica (quartz) content naturally varies depending on the composition of the soil. These materials are mined from the earth. Trace amounts of naturally occurring elements might be detected during chemical analysis of these materials.

California Prop 65: This product does contain ingredients, which are known to the state of California to cause cancer, birth defects, or other reproductive harm. Crystalline Silica (Quartz) CAS# 14808-60-7 and Crystalline Silica (Cristobalite) CAS# 14464-46-1

HAZARDS DISCLOSURE: This product contains known hazardous materials as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200. As defined under Sara 311 and 312, this product contains known hazardous materials.

3. HAZARDS IDENTIFICATION**EMERGENCY OVERVIEW:**

Warning! Product dust may cause eye, skin and respiratory irritation. This product contains crystalline silica, which is known to cause cancer, birth defects, or other reproductive harm to humans when exposed to levels above permissible levels.

NFPA Rating: Health - 1, Flammability - 0, Reactivity - 0
 NFPA Definitions: (0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme).

Potential Health Effects:

Inhalation: This product may represent an inhalation hazard with creation of respirable dust.

Ingestion: Small quantities this product does not represent an ingestion hazard. Large quantities can cause intestinal distress.

Skin Contact: Dust maybe irritating to skin, abrasions and dry skin.

MATERIAL SAFETY DATA SHEET



Eye Contact: Dust may cause irritation or inflammation.

Chronic Exposure: Risk of injury depends on duration and level of exposure. Prolonged or repeated inhalation of respirable crystalline silica at or above allowable occupational exposure limits may lead to the development of silicosis.

Aggravation of Pre-existing Conditions: Pre-existing skin and respiratory problems.

Carcinogenicity: Crystalline Silica is listed by the NTP, IARC, or regulated by OSHA as a carcinogen.

4. FIRST AID MEASURES

Inhalation: Remove to fresh air if exposed to large amounts of dust. Seek medical attention for discomfort or if coughing or other symptoms do not subside.

Ingestion: Do not induce vomiting. Seek medical attention or contact poison control center immediately.

Skin Contact: Wash thoroughly with soap and water. Seek medical attention for rash or irritation.

Eye Contact: Immediately flush eyes with large amounts of water for at least 15 minutes. Seek medical attention if irritation or blurred vision occurs.

5. FIRE FIGHTING MEASURES

Flash Point (PMCC): Not Flammable

Auto-ignition temperature: Not Applicable

Flammable limits in air % by volume: LEL: Not Applicable UEL: Not Applicable

Explosion: N/A

Fire Extinguishing Media: Use any means suitable for extinguishing surrounding fire.

Special Fire Fighting Procedures: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

6. ACCIDENTAL RELEASE MEASURES

If uncontaminated, product can be reused. Avoid actions that cause dusts to become airborne. Avoid inhalation of dust. Do not wash product down sewage and drainage systems or into bodies of water.

7. HANDLING AND STORAGE

Storage Temperature (min/max): NA

Shelf Life: N/A

HANDLING (PERSONNEL): Handle in accordance with good hygiene and safety procedures.

STORAGE PRECAUTIONS: Store product separately from feed, food, pesticides and fertilizers so that cross contamination does not occur. Heat may be generated from a stockpile of product due to natural decomposition of organic materials.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Airborne Exposure Limits:

Airborne Exposure Limits Diatomaceous Earth Dust

Respirable Fraction OSHA PEL ACGIH TLV

Total Dust 3 mg/m³ 5 mg/m³

Airborne Exposure Limits Crystalline Silica (Quartz) Dust 15 mg/m³ 10 mg/m³

Respirable Fraction OSHA PEL ACGIH TLV

Respirable Fraction 5 mg/m³/%SiO₂+2 0.1 mg/m³

Airborne Exposure Limits: Crystalline Silica (Cristoballite) Dust

Respirable Fraction OSHA PEL ACGIH TLV

Respirable Fraction 5 mg/m³/%SiO₂+2 0.05 mg/m³

MATERIAL SAFETY DATA SHEET



Page 3 of 4

Updated December 17, 2010

Ventilation System: Always work in a well ventilated area.
Personal Respirators (NIOSH Approved): None required if dust is below permissible exposure levels.
Skin Protection: Observe good industrial hygiene practices.
Eye Protection: Always wear safety glasses when working with this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

FORM: Solid (Granular)	COLOR: Tan to white
ODOR: Odorless	SPECIFIC GRAVITY: 2.22
SOLUBILITY IN WATER: <2.0%	MELTING/FREEZING POINT: N/A
BOILING POINT: N/A	EVAPORATION RATE (BuAc=1): N/A
VISCOSITY: N/A	AUTOIGNITION TEMPERATURE: N/A
VAPOR DENSITY (Air=1): N/A	VAPOR PRESSURE (mm Hg): N/A
VOLATILE ORGANIC COMPOUNDS (VOC #/gal): N/A	

10. STABILITY AND REACTIVITY

Stability: Stable under ordinary conditions of use and storage.
Hazardous Decomposition Products: None
Hazardous Polymerization: Will not occur.
Incompatibilities: Hydrofluoric acid may generate heat upon mixing with this product.
Conditions to Avoid: Incompatible materials.

11. TOXICOLOGICAL INFORMATION

Toxicity Data:

This product contains sand, clay, and decomposed organic matter. The crystalline silica content naturally varies.

Cancer Lists

Ingredient

Crystalline Silica (Quartz)
Crystalline Silica (Cristobalite)

---NTP Carcinogen---

<u>Known</u>	<u>Anticipated</u>	<u>IARC Category</u>
YES	YES	Group 1
YES	YES	Group 1

12. ECOLOGICAL INFORMATION

Environmental Fate: No Data Available

Environmental Toxicity: No Data Available

13. DISPOSAL CONSIDERATIONS

Dispose of all materials in accordance with federal, state and local requirements.

14. TRANSPORTATION INFORMATION

Domestic (Land, D.O.T.) International (Water, I.M.O. & Air, I.C.A.O.)
SHIPPING NAME: Non-Regulated Material
PRODUCT LABEL: NA **UN NUMBER:** N/A

15. REGULATORY INFORMATION

MATERIAL SAFETY DATA SHEET



Page 4 of 4

Updated December 17, 2010

Federal, State & International Regulations

Ingredient	<u>SARA 302</u>		<u>List</u>	<u>-SARA 313-</u>	<u>CERCLA</u>	<u>RCRA</u>	<u>TSCA</u>
	<u>RQ</u>	<u>TPQ</u>		<u>Chemical Catalog</u>			
Diatomaceous Earth	NO	NO	NO	NO	NO	NO	NO
Crystalline Silica (Quartz)	NO	NO	NO	NO	NO	NO	NO
Crystalline Silica (Cristobalite)	NO	NO	NO	NO	NO	NO	NO

Chemical Weapons Convention: No **TSCA 12(b):** No **CDTA:** No

SARA 311/312: Acute: YES; Chronic: YES; Fire: NO; Pressure: NO; Reactivity: NO (Mixture / Liquid)

California Prop 65:

WARNING! This product does contain ingredients, which are known to the state of California to cause cancer, birth defects, or other reproductive harm. Crystalline Silica (Quartz) CAS# 14808-60-7 and Crystalline Silica (Cristobalite) CAS# 14464-46-1

Canada:

WHMIS: This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

Soil may be subject to WHIMS depending on the intended use and workers exposure. Product containing crystalline Silica is classified as D2A and is subject to WHIMS requirements.

This material or all of its components are listed on the Inventory of Existing Chemical Substances under the Toxic Substance Control Act (TSCA). This material or all of its components are listed on the Canadian Domestic Substances List (DSL). This material or all of its components are listed (or considered as having been notified) on the European Inventory of Existing Chemical Substances (EINECS). Other inventory lists: ENCS (Japan), Korea, Australia, China (Draft), PICCS (Philippines), Japan (ENCS).

16. OTHER INFORMATION

Prepared By: Paul Eigbrett; MSDS Authoring PLUS
Supersedes Date: December 15, 2009

Approval Date: October 06, 2010

This Material Safety Data Sheet (MSDS) has been reviewed to fully comply with the guidance contained in the ANSI MSDS standard (ANSI Z400.1-2004).

This information is furnished gratuitously and independent of the sales of the product without warranty, expressed or implied, except that it is accurate to the best knowledge of the Moltan Company. NO WARRANTY, EITHER EXPRESS OR IMPLIED, WHETHER OF MERCHANTABILITY OF FITNESS OF ANY NATURE OR OTHERWISE WITH RESPECT TO THE PRODUCT OR TO THE DATA HEREIN IS MADE HEREUNDER. The data in this Material Safety Data Sheet relates only to the specific material designated herein. It does not relate to use in combination with any other material or in any process.

NONE.



ODOURIZED Natural Gas Material Safety Data Sheet

Cette information existe également en français.

Health Hazard	1
Flammability	4
Reactivity	0

SECTION I: PRODUCT INFORMATION

Supplier MANITOBA HYDRO 360 Portage Avenue Winnipeg, Manitoba Canada R3C 0G8	WHMIS Classification Class A—Compressed Gas Class B—Div. 1 - Flammable Compressed Gas	Chemical Family Alkane Simple Hydrocarbons	TDG: Shipping Name Natural Gas, compressed (with high methane content)
Emergency Telephone Numbers (204) 480-5900 (in Winnipeg) 1-888-624-9376 (outside Winnipeg)	Trade Name Odourized Natural Gas	Molecular Family CH ₄ (Methane)	UN/PIN: 1971
	Chemical Name Methane	Product Use Natural Gas is used primarily as a heating fuel for domestic and industrial purposes.	Class: 2.1
	Synonyms Natural Gas/Methane	Method of Transport Pipeline (under pressure)	

SECTION II: HAZARDOUS COMPONENTS

COMPONENT	CONCENTRATION %	GAS	PIN	LD ₅₀ / LC ₅₀ SPECIES AND ROUTE	EXPOSURE LIMIT
Methane	> 95.0%	74-82-8	UN 1971	Cat (Inhalation) = 900,000 ppm (90% in air)	Simple Asphyxiant
Ethane	< 2.0%	74-84-0	UN 1035	N. Av.	Simple Asphyxiant
Nitrogen	< 2.0%	7727-37-9	UN 1066	N. Av.	Simple Asphyxiant
Other Hydrocarbons	< 0.5%			N. Av.	N. Av.

SECTION III: PHYSICAL DATA

Appearance and Odour Colourless; skunky odour.	Freezing Point (as Methane) -183°C	Molecular Weight (Methane) 16.04	Vapor Density in Air (gaseous specific gravity) 0.53 to 0.7 (as Methane)
Odour Threshold Reported to be about 200 ppm of odourous natural gas.	Vapor Pressure 300–600 psig (in pipeline)	pH Value Not Applicable.	Solubility in Water (as Methane) 0.0022% (Slight)
Boiling Point (as Methane) -162°C	Specific Gravity Not Applicable.	Percent Volatile (by volume) 100%	

SECTION IV: FIRE AND EXPLOSION HAZARD DATA

Flammability In presence of air/oxygen.	Special Fire Fighting Procedures Control release by limiting or shutting off source utilizing pipeline/control valves. Evacuate area. Keep upwind of fire.
Flammability Range (% by volume) 5.0% lower – 15.4% upper	Unusual Fire and Explosion Hazards Could be potentially hazardous if uncontrolled in a confined space. NOTE: Natural gas is lighter than air and will dissipate to atmosphere. A hazard from re-ignition or explosion exists if the flame is extinguished without stopping flow of natural gas and/or cooling surroundings and eliminating ignition source. (Use water spray to cool surroundings and exposures.)
Flashpoint -188°C TCC	
Fire Extinguishing Media Dry chemical, carbon dioxide (CO ₂), foam, water fog or Halon.	
Auto Ignition Temperature 537°C	

SECTION V: HEALTH HAZARD DATA**Effects of Short Term (Acute) Exposure****Inhalation**

At high concentrations natural gas acts as an asphyxiant by displacing oxygen in the air.

Displacement of air by natural gas may lead to shortness of breath, unconsciousness and death from lack of oxygen. Incomplete combustion may produce carbon monoxide.

Methane may cause narcosis above 300,000 ppm (30% in air).

Eye Contact

Natural gas does not irritate the eyes.

Skin Contact

Natural gas is not a skin irritant, may cause frostbite on skin contact.

Ingestion

Not applicable.

Effects of Long Term (Chronic) Exposure**Carcinogenicity**

No specific data.

Reproduction

No specific data.

Mutagenicity

No specific data.

SECTION VI: REACTIVITY DATA**Stability**

Natural gas/methane is stable.

Conditions to Avoid

Uncontrolled explosive mixtures, open flame, spark source and static discharge.

Natural gas readily mixes with air when released and creates a combustible atmosphere (particularly in confined areas).

Incompatibility

Strong oxidizing agents (e.g. peroxides, perchlorates) as well as halogen compounds (e.g. chlorine) can increase the risk of fire and explosion.

Hazardous Polymerization

Will not occur.

Hazardous Decomposition Products

Oxides of carbon and trace amounts of oxides of sulphur and nitrogen (SO_x and NO_x).

SECTION VII: FIRST AID MEASURES**Inhalation**

Move victim(s) into fresh air. Restore and/or support breathing as necessary. Oxygen may be beneficial. Obtain medical assistance. If heart has stopped, perform C.P.R.

SECTION VIII: SPILL OR LEAK PROCEDURES**Steps to be Taken in Case Gas Leak/Line Break Occurs**

Shut off source of natural gas supply, evacuate area, eliminate ignition sources, ventilate closed spaces.

Minor leaks can be detected with a soap solution applied at suspected leak points.

Emergency Telephone Numbers

(204) 480-5900 (in Winnipeg)

1-888-624-9376 (outside Winnipeg)

NEVER USE AN OPEN FLAME TO DETECT LEAKS.

SECTION IX: PREVENTATIVE MEASURES**Engineering Controls**

May be required to reduce hazardous exposures, e.g. explosion proof mechanical ventilation and lighting, process or personal enclosure, control of process conditions and process modification.

Handling and Storing Precautions

Avoid personal body contact (skin/eye contact, etc.) with high pressure natural gas. Avoid all possible sources of accidental ignition, e.g. static electricity, mechanical impact and other explosive sources. **Do not operate electrical switches.**

Respiratory Protection (specify type)**DO NOT USE AIR PURIFYING RESPIRATORS.**

Positive pressure, self contained breathing apparatus for emergency use. Adequate ventilation required. Adequate venting of possible combustion products required.

Other Protective Equipment

CSA/ASA Safety Equipment must be available/worn as required to protect ears, eyes, feet, hands, head and remaining body area.

SECTION X: PREPARATION INFORMATION**Prepared By**

Tammis R. Stathers, CRSP
Workplace Environment Department,
Manitoba Hydro
(204) 360-3628

Preparation Date

March 1, 2014

1. Identification of the substance/preparation and of the company/undertaking

Product name: **MS T&T Cleaner**

Product use: Cleaning product
Product is for professional use only

Relevant identified uses of the substance or mixture and uses advised against

Identified uses
Car wash product. Semi-Automatic proces

Uses advised against
None known.

Company/undertaking identification: Schippers Europe B.V.
Rond Deel 12
5531 AH Bladel, The Netherlands
Tél.: 0031 (0) 497-382017
Fax: 0031 (0) 497-382096
contact.nl@schippers.eu

Emergency telephone number
National advisory body/Poison Centre
Telephone number : 0870 600 6266 (This service is only available to health professionals)

2. Hazards identification

Classification of the substance or mixture

Product definition : Mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Flam. Liq. 3, H226
Met. Corr. 1, H290
Skin Corr. 1A, H314

The classification of this product is based only on its extreme pH value (in accordance with current European legislation)

Classification according to Directive 1999/45/EC [DPD]

Classification : C; R35
The classification of this product is based only on its extreme pH value (in accordance with current European legislation)

Human health hazards Causes severe burns.

See Section 16 for the full text of the R phrases or H statements declared above.
See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Hazard pictograms



Signal word

Danger

Contains

ethylenediamine tetracetate
Ethanalamines
Anionic surfactants
Potassium Hydroxide
Sodium hydroxide

Hazard statements

H226 Flammable liquid and vapour.

H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.

Precautionary statements

Prevention

P210 - Keep away from heat, sparks, open flames and hot surfaces. - No smoking.

Response

P280 - Wear protective gloves and eye/face protection.
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 - Immediately call a POISON CENTER or doctor/physician.

2.3 Other hazards

Other hazards which do not result in classification

Not applicable.

3. Composition/information on ingredients

Product/ingredient name	Identifiers	%	Classification		Type
			67/548/EEC	Regulation (EC) No. 1272/2008 [CLP]	
ethylenediamine tetraacetate	REACH #: 01-2119486762-27 EC: 200-573-9 CAS: 64-02-8 Index: 607-428-00-2	10-20	Xn; R20/22 Xi; R41	Acute Tox. 4, H302 Acute Tox. 4, H332 Eye Dam. 1, H318	[1]
Propan-2-ol	REACH #: 01-2119457558-25 EC: 200-661-7 CAS: 67-63-0 Index: 603-117-00-0	5-10	F; R11 Xi; R36 R67	Flam. Liq. 2, H225 Eye Irrit. 2, H319 STOT SE 3, H336	[1][2]
Ethanolamines	REACH #: 01-2119486455-28 EC: 205-483-3 CAS: 141-43-5 Index: 603-030-00-8	3-5	Xn; R20/21/22 C; R34	Acute Tox. 4, H302 Acute Tox. 4, H312 Acute Tox. 4, H332 Skin Corr. 1B, H314 STOT SE 3, H335 Eye Irrit. 2, H319	[1][2]
Ethanolamines	REACH #: 01-2119486482-31 EC: 203-049-8 CAS: 102-71-6	1-5	Not classified.	Eye Irrit. 2, H319	[1]
Anionic surfactants	EC: 271-532-0	1-5	Xi; R36/38	Skin Irrit. 2, H315	[1]
Potassium Hydroxide	CAS: 68584-25-8 REACH #: 01-2119487136-33 EC: 215-181-3 CAS: 1310-58-3 Index: 019-002-00-8	1-2	Xn; R22 C; R35	Eye Irrit. 2, H319 Acute Tox. 4, H302 Skin Corr. 1A, H314	[1][2]
Sodium hydroxide	REACH #: 01-2119457892-27 EC: 215-185-5 CAS: 1310-73-2 Index: 011-002-00-6	0.5-2	C; R35 See Section 16 for the full text of the R-phrases declared above.	Skin Corr. 1A, H314 See Section 16 for the full text of the H-statements declared above.	[1][2]

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Type

- [1] Substance classified with a health or environmental hazard
 - [2] Substance with a workplace exposure limit
 - [3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
 - [4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII
- Occupational exposure limits, if available, are listed in Section 8.

4. First aid measures

Description of first aid measures

Eye contact :

Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 minutes. Chemical burns must be treated promptly by a physician. Get medical attention immediately. Call a poison center or physician.

Inhalation :

Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. Get medical attention immediately. Call a poison center or physician.

Skin contact :

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 15 minutes. Chemical burns must be treated promptly by a physician. Wash contaminated clothing before reusing. Clean shoes thoroughly before reuse. Get medical attention immediately. Call a poison center or physician.

Ingestion :

Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention immediately. Call a poison center or physician.

Protection of first-aiders :

No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

Most important symptoms and effects, both acute and delayed

Potential acute health effects

Eye contact :

Causes serious eye damage.

Inhalation :

May give off gas, vapour or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin contact :

Causes severe burns.

Ingestion :

May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact :

adverse symptoms may include the following:

pain
watering
redness

Inhalation :

Adverse symptoms may include the following:

respiratory tract irritation
coughing

Skin contact :

Adverse symptoms may include the following:

pain or irritation
redness
blistering may occur

Ingestion :

Adverse symptoms may include the following:

stomach pains

Indication of any immediate medical attention and special treatment needed

Notes to physician :

In case of inhalation of decomposition products in a fire, symptoms may be delayed.

Specific treatments :

No specific treatment.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media:

Use dry chemical, CO₂, water spray (fog) or foam.

Unsuitable extinguishing media:

Do not use water jet.

Special hazards arising from the substance or mixture

Hazards from the substance or mixture:

Flammable liquid and vapour. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard.

Hazardous combustion products:

Decomposition products may include the following materials:

carbon dioxide
carbon monoxide
nitrogen oxides
sulfur oxides
metal oxide/oxides

Advice for firefighters

Special precautions for fire-fighters:

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water

spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters:

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel:

No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Try to avoid touching or walking through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

for emergency responders

If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions:

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill:

Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment.

Large spill :

Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Use spark-proof tools and explosion-proof equipment. Contaminated absorbent material may pose the same hazard as the spilt product.

Reference to other sections:

See Section 1 for emergency contact information.

See Section 8 for information on appropriate personal protective equipment.

See Section 13 for additional waste treatment information.

7. Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

Precautions for safe handling

Protective measures :

Stop leak if without risk. Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows.

Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Use spark-proof tools and explosion-proof equipment. Contaminated absorbent material may pose the same hazard as the spilt product. acids. Spillages should be cleaned up promptly to avoid damage to surrounding materials.

Advice on general occupational hygiene:

Workers should wash hands and face before eating, drinking and smoking. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities:

Store between the following temperatures: 5 to 45°C (41 to 113°F). Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Store in corrosive resistant container with a resistant inner liner. Eliminate all ignition sources. Separate from acids. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Specific end use(s)

Recommendations :

Not applicable. until Exposure Scenarios for substances become available.

Industrial sector specific solutions:

Not applicable. until Exposure Scenarios for substances become available.

8. Exposure controls/Personal protection

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
Propan-2-ol	EH40/2005 WELs (United Kingdom (UK), 8/2007). STEL: 1250 mg/m ³ 15 minute(s). STEL: 500 ppm 15 minute(s). TWA: 999 mg/m ³ 8 hour(s). TWA: 400 ppm 8 hour(s).
Ethanolamines	EH40/2005 WELs (United Kingdom (UK), 8/2007). Absorbed through skin. STEL: 7.6 mg/m ³ 15 minute(s). STEL: 3 ppm 15 minute(s). TWA: 2.5 mg/m ³ 8 hour(s). TWA: 1 ppm 8 hour(s).
Potassium Hydroxide	EH40/2005 WELs (United Kingdom (UK), 8/2007). STEL: 2 mg/m ³ 15 minute(s).
Sodium hydroxide	EH40/2005 WELs (United Kingdom (UK), 8/2007). STEL: 2 mg/m ³ 15 minute(s).

Derived effect levels

No DELs available.

Predicted effect concentrations

No PECs available

Exposure controls

Appropriate engineering controls:

Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures :

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection (EN 166):

Highly recommended : Goggles, face shield, or other full-face protection.

Skin protection

Hand protection (EN 374):

Highly recommended : Gloves - butyl rubber , nitrile rubber (Breakthrough time: 1 - 4 hours) .

Body protection (EN 14605):

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection :

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection (EN 143, 14387):

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Thermal hazards

Not applicable.

Environmental exposure controls:

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance

Physical state :

Liquid.

Colour :

Yellow [Light]

Odour :

chlorine

Odour threshold :

Not applicable and/or not determined for the mixture.

pH :

13.6 to 14 [Conc. (% w/w): 100%]

Melting point/freezing point :

Not applicable and/or not determined for the mixture.

Initial boiling point and boiling range:

Not applicable and/or not determined for the mixture.

Flash point :	> 100°C
Evaporation rate :	Not applicable and/or not determined for the mixture.
Flammability (solid, gas) :	Not applicable and/or not determined for the mixture.
Burning time :	Not applicable and/or not determined for the mixture.
Burning rate :	Not applicable and/or not determined for the mixture.
Upper/lower flammability or explosive limits:	Not applicable and/or not determined for the mixture.
Vapour pressure :	Not applicable and/or not determined for the mixture.
Vapour density :	Not applicable and/or not determined for the mixture.
Relative density :	1.14 to 1.18
Solubility(ies) :	Easily soluble in the following materials: cold water and hot water.
Partition coefficient: noctanol/water:	Not applicable and/or not determined for the mixture.
Auto-ignition temperature :	Not applicable and/or not determined for the mixture.
Decomposition temperature :	Not applicable and/or not determined for the mixture.
Viscosity :	Not applicable and/or not determined for the mixture.
Explosive properties :	Not applicable.
Oxidising properties :	Yes.

Other information

No additional information.

10. Stability and reactivity

Reactivity :

No specific test data related to reactivity available for this product or its ingredients.

Chemical stability :

The product is stable.

Possibility of hazardous reactions:

Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid :

Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

Incompatible materials :

Extremely reactive or incompatible with the following materials: acids.

Hazardous decomposition products:

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
ethylenediamine tetraacetate	LD50 Oral	Rat	1700 mg/kg	-
Propan-2-ol	LC50 Inhalation Vapour	Rat	30 mg/l	4 hours
	LD50 Dermal	Rabbit	12870 mg/kg	-
	LD50 Oral	Rat	4710 mg/kg	-
Ethanolamines	LD50 Dermal	Rabbit	1025 mg/kg	-
	LD50 Oral	Rat	1089 mg/kg	-
Ethanolamines	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	6400 mg/kg	-

Conclusion/Summary :

No known significant effects or critical hazards.

Acute toxicity estimates

Route	ATE value
Oral	5642.7 mg/kg
Dermal	20707.1 mg/kg
Inhalation (gases)	23684.2 ppm
Inhalation (vapours)	45.93 mg/l
Inhalation (dusts and mists)	7.895 mg/l

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Ethanolamines	Eyes - Mild irritant	Rabbit	-	10 milligrams	-
	Eyes - Severe irritant	Rabbit	-	20 milligrams	-
	Skin - Mild irritant	Human	-	72 hours 15 milligrams Intermittent	-
	Skin - Mild irritant	Rabbit	-	24 hours 560 milligrams	-

Conclusion/Summary :

Not determined for the mixture.

Sensitiser

Conclusion/Summary :

Not determined for the mixture.

Mutagenicity

Conclusion/Summary :

Not determined for the mixture.

Carcinogenicity

Conclusion/Summary :

Not determined for the mixture.

Reproductive toxicity

Conclusion/Summary :

Not determined for the mixture.

Teratogenicity

Conclusion/Summary :

Not determined for the mixture.

Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
Propan-2-ol Ethanolamines	Category 3 Category 3	Not determined Not determined	Narcotic effects Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

No known significant effects or critical hazards.

Aspiration hazard

No known significant effects or critical hazards.

Information on the likely routes of exposure:

Not determined for the mixture.

Potential acute health effects

Inhalation :

May give off gas, vapour or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Ingestion :

May cause burns to mouth, throat and stomach.

Skin contact :

Causes severe burns.

Eye contact :

Causes serious eye damage.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation :

No specific data.

Ingestion :

Adverse symptoms may include the following:
stomach pains

Skin contact :

Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Eye contact :

Adverse symptoms may include the following:
pain
watering
redness

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects:

No known significant effects or critical hazards.

Potential delayed effects :

No known significant effects or critical hazards.

Long term exposure

Potential immediate effects:

No known significant effects or critical hazards.

Potential delayed effects :

No known significant effects or critical hazards.

Potential chronic health effects

Conclusion/Summary :

No known significant effects or critical hazards.

General :

No known significant effects or critical hazards.

Carcinogenicity :

No known significant effects or critical hazards.

Mutagenicity :

No known significant effects or critical hazards.

Teratogenicity :

No known significant effects or critical hazards.

Developmental effects :

No known significant effects or critical hazards.

Fertility effects :

No known significant effects or critical hazards.

Other information :

Not determined for the mixture.

12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
ethylenediamine tetraacetate	Acute LC50 121 mg/l	Fish	96 hours
Propan-2-ol	Acute LC50 9640 mg/l	Fish	96 hours
Ethanolamines	Acute LC50 >100 mg/l	Fish	96 hours
Ethanolamines	Acute LC50 11800 mg/l	Fish	96 hours
Potassium Hydroxide	Acute LC50 80 mg/l	Fish	96 hours
Sodium hydroxide	Acute EC50 40 mg/l	Daphnia	48 hours

Conclusion/Summary :

The surfactants contained in the product are biodegradable according to the requirements of the detergent regulation 648/2004/EC

Persistence and degradability

Conclusion/Summary :

The surfactants contained in the product are biodegradable according to the requirements of the detergent regulation 648/2004/EC

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
ethylenediamine tetraacetate	5.01	-	high
Propan-2-ol	0.05	-	low
Ethanolamines	-1.31	-	low
Ethanolamines	-1	3.890451449	low

Conclusion/Summary :

Not determined for the mixture.

Mobility in soil

Soil/water partition coefficient (KOC):
Not determined for the mixture.

Mobility :
Not determined for the mixture.

Results of PBT and vPvB assessment
PBT : Not applicable.
vPvB : Not applicable.

Other adverse effects :
No known significant effects or critical hazards.

13. Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

Waste treatment methods

Product

Methods of disposal :

The generation of waste should be avoided or minimised wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Significant quantities of waste product residues should not be disposed of via the foul sewer but processed in a suitable effluent treatment plant. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Hazardous waste :
Yes.

European waste catalogue (EWC)

Waste code	Waste designation
20 01 29*	detergents containing dangerous substances

Packaging


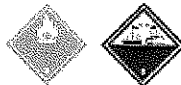


Methods of disposal :

The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled.

Special precautions :

This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

14. Transport information

	ADR/RID	ADN/ADNR	IMDG	IATA
14.1 UN number	UN2924	UN2924	UN2924	UN2924
14.2 UN proper shipping name	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Potassium hydroxide, Isopropanol)	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Potassium hydroxide, Isopropanol)	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Potassium hydroxide, Isopropanol)	Flammable liquid, corrosive, n.o.s. (Potassium hydroxide, Isopropanol)
14.3 Transport hazard class(es)	3 (8) 	3 (8) 	3 (8) 	3 (8) 
14.4 Packing group	III	III	III	III
14.5 Environmental hazards	No.	No.	No.	No.
14.6 Special precautions for user	None.	None.	None.	None.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:
 Not applicable.

15. Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Substances of very high concern

None of the components are listed.

Annex XVII – Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles:

Not applicable.

Other EU regulations Ingredient declaration according to detergent regulation 648/2004/EC:

Ingredient declaration according to detergent regulation 648/2004/EC:

≥15 - <30% EDTA
 ≥5 - <15% soap
 <5% anionic surfactants

National regulations

United Kingdom (UK)

The Chemicals (Hazard Information and Packaging for Supply) Regulations.

The Control of Substances Hazardous to Health Regulations.

Health and Safety at Work Act.

Chemical Safety Assessment:

This product contains substances for which Chemical Safety Assessments are still

required.

16. Other information

Abbreviations and acronyms:

ADN/ADNR =	European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway
ADR =	The European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE =	Acute Toxicity Estimate
BCF =	Bioconcentration Factor
CLP =	Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
DNEL =	Derived No Effect Level
DPD =	Dangerous Preparations Directive [1999/45/EC]
EC =	European Commission
EUH statement =	CLP-specific Hazard statement
IATA =	International Air Transport Association
IBC =	Intermediate Bulk Container
IMDG =	International Maritime Dangerous Goods
LogPow =	logarithm of the octanol/water partition coefficient
MARPOL 73/78 =	International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
OEL =	Occupational Exposure Limit
PBT =	Persistent, Bioaccumulative and Toxic
PNEC =	Predicted No Effect Concentration
REACH =	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation [Regulation (EC) No. 1907/2006]
RID =	The Regulations concerning the International Carriage of Dangerous Goods by Rail
REACH # =	REACH Registration Number
vPvB =	Very Persistent and Very Bioaccumulative

Full text of abbreviated H statements:

Classification	Justification
Flam. Liq. 3, H226	On basis of test data
Met. Corr. 1, H290	On basis of test data
Skin Corr. 1A, H314	On basis of test data

Full text of classifications [CLP/GHS]:

H225	Highly flammable liquid and vapour.
H226	Flammable liquid and vapour.
H290	May be corrosive to metals.
H302	Harmful if swallowed.
H312	Harmful in contact with skin.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.

Full text of abbreviated R phrases:

Acute Tox. 4, H302
 Acute Tox. 4, H312
 Acute Tox. 4, H332
 Eye Dam. 1, H318
 Eye Irrit. 2, H319
 Flam. Liq. 2, H225
 Flam. Liq. 3, H226
 Met. Corr. 1, H290
 Skin Corr. 1A, H314
 Skin Corr. 1B, H314
 Skin Irrit. 2, H315
 STOT SE 3, H335

STOT SE 3, H336

ACUTE TOXICITY: ORAL - Category 4
 ACUTE TOXICITY: SKIN - Category 4
 ACUTE TOXICITY: INHALATION - Category 4
 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1
 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
 FLAMMABLE LIQUIDS - Category 2
 FLAMMABLE LIQUIDS - Category 3
 CORROSIVE TO METALS - Category 1
 SKIN CORROSION/IRRITATION - Category 1A
 SKIN CORROSION/IRRITATION - Category 1B
 SKIN CORROSION/IRRITATION - Category 2
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Respiratory tract irritation] - Category 3
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Narcotic effects] - Category 3

Full text of classifications [DSD/DPD]:

R11 - Highly flammable.
 R22 - Harmful if swallowed.
 R20/22 - Harmful by inhalation and if swallowed.
 R20/21/22 - Harmful by inhalation, in contact with skin and if swallowed.
 R34 - Causes burns.
 R35 - Causes severe burns.
 R41 - Risk of serious damage to eyes.
 R36 - Irritating to eyes.
 R36/38 - Irritating to eyes and skin.
 R67 - Vapours may cause drowsiness and dizziness.

Full text of classifications [DSD/DPD]

F - Highly flammable
 C - Corrosive
 Xn - Harmful
 Xi - Irritant

Notice to reader

The above information is believed to be correct with respect to the formula used to manufacture the product in the country of origin. As data, standards, and regulations change, and conditions of use and handling are beyond our control, NO WARRANTY, EXPRESS OR IMPLIED, IS MADE AS TO THE COMPLETENESS OR CONTINUING ACCURACY OF THIS INFORMATION.



Revision Number: 002.0

Issue date: 05/07/2014

1. PRODUCT AND COMPANY IDENTIFICATION

Product name:	LOCTITE 638 RETAIN CMPND 50ML	IDH number:	1835936
Product type:	Anaerobic Adhesive	Item number:	1835936
Restriction of Use:	None identified	Region:	United States
Company address:	Contact information:		
Henkel Corporation	Telephone: (860) 571-5100		
One Henkel Way	MEDICAL EMERGENCY Phone: Poison Control Center		
Rocky Hill, Connecticut 06067	1-877-671-4608 (toll free) or 1-303-592-1711		
	TRANSPORT EMERGENCY Phone: CHEMTREC		
	1-800-424-9300 (toll free) or 1-703-527-3887		
	Internet: www.henkelna.com		

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER: CAUSES SKIN IRRITATION.
MAY CAUSE AN ALLERGIC SKIN REACTION.
CAUSES SERIOUS EYE DAMAGE.

HAZARD CLASS	HAZARD CATEGORY
SKIN IRRITATION	2
SERIOUS EYE DAMAGE	1
SKIN SENSITIZATION	1

PICTOGRAM(S)



Precautionary Statements

Prevention:	Avoid breathing vapors, mist, or spray. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Wear eye and face protection. Wear protective gloves.
Response:	IF ON SKIN: Wash with plenty of soap and water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to remove. Continue rinsing. Immediately call a poison control center or physician. If skin irritation or rash occurs: Get medical attention. Take off contaminated clothing.
Storage:	Not prescribed
Disposal:	Dispose of contents and/or container according to Federal, State/Provincial and local governmental regulations.

Classification complies with OSHA Hazard Communication Standard (29 CFR 1910.1200) and is consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Component(s)	CAS Number	Percentage*

IDH number: 1835936

Product name: LOCTITE 638 RETAIN CMPND 50ML

Dimethacrylate ester	Proprietary	30 - 60
Methacrylate monomer	Proprietary	10 - 30
2-Hydroxyethyl methacrylate	868-77-9	10 - 30
Polyurethane methacrylate resin	Unknown	5 - 10
Acrylic acid	79-10-7	1 - 5
Hydroxyalkyl methacrylate	27813-02-1	1 - 5
Cumene hydroperoxide	80-15-9	0.1 - 1
Polyglycol dimethacrylate	Proprietary	0.1 - 1
Methacrylic acid	79-41-4	0.1 - 1

* Exact percentage is a trade secret. Concentration range is provided to assist users in providing appropriate protections.

4. FIRST AID MEASURES

Inhalation:	Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Skin contact:	Immediately flush skin with plenty of water (using soap, if available). Remove contaminated clothing and footwear. Wash clothing before reuse. Get medical attention.
Eye contact:	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
Ingestion:	DO NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.
Symptoms:	See Section 11.

5. FIRE FIGHTING MEASURES

Extinguishing media:	Water spray (fog), foam, dry chemical or carbon dioxide.
Special firefighting procedures:	Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear. In case of fire, keep containers cool with water spray.
Unusual fire or explosion hazards:	Uncontrolled polymerization may occur at high temperatures resulting in explosions or rupture of storage containers.
Hazardous combustion products:	Oxides of carbon. Oxides of sulfur. Oxides of nitrogen. Irritating organic vapours.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions:	Do not allow product to enter sewer or waterways.
Clean-up methods:	Remove all sources of ignition. Evacuate and ventilate spill area; dike spill to prevent entry into water system; wear full protective equipment during clean-up. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Scrape up as much material as possible. Store in a partly filled, closed container until disposal. Refer to Section 8 "Exposure Controls / Personal Protection" prior to clean up.

7. HANDLING AND STORAGE

- Handling:** Use only with adequate ventilation. Prevent contact with eyes, skin and clothing. Do not breathe vapor and mist. Wash thoroughly after handling. Do not taste or swallow. Refer to Section 8.
- Storage:** For safe storage, store at or below 38 °C (100.4 °F)
Keep in a cool, well ventilated area away from heat, sparks and open flame.
Keep container tightly closed until ready for use.

For information on product shelf life contact Henkel Customer Service at (800) 243-4874.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous Component(s)	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Dimethacrylate ester	None	None	None	None
Methacrylate monomer	None	None	None	None
2-Hydroxyethyl methacrylate	None	None	None	3 ppm Ceiling
Polyurethane methacrylate resin	None	None	None	None
Acrylic acid	2 ppm TWA (SKIN)	None	None	1 ppm TWA 3 ppm STEL (SKIN)
Hydroxyalkyl methacrylate	None	None	None	1 ppm TWA 3 ppm STEL
Cumene hydroperoxide	None	None	1 ppm (6 mg/m3) TWA (SKIN)	None
Polyglycol dimethacrylate	None	None	None	None
Methacrylic acid	20 ppm TWA	None	None	None

- Engineering controls:** Provide adequate local exhaust ventilation to maintain worker exposure below exposure limits.
- Respiratory protection:** Use a NIOSH approved air-purifying respirator with an organic vapor cartridge. If this material is handled at elevated temperatures or under mist forming conditions, without engineering controls, a NIOSH approved respirator must be used.
- Eyeface protection:** Safety goggles or safety glasses with side shields. Full face protection should be used if the potential for splashing or spraying of product exists. Safety showers and eye wash stations should be available.
- Skin protection:** Use chemical resistant, impermeable clothing including gloves and either an apron or body suit to prevent skin contact. Neoprene gloves.

9. PHYSICAL AND CHEMICAL PROPERTIES

- Physical state:** Liquid
- Color:** Green
- Odor:** Characteristic
- Odor threshold:** Not available.
- pH:** Not applicable
- Vapor pressure:** < 10 mm hg (27 °C (80.6 °F))
- Boiling point/range:** > 149 °C (> 300.2 °F)
- Melting point/ range:** Not available.
- Specific gravity:** 1.1
- Vapor density:** Not available.
- Flash point:** 93.3 °C (199.94 °F)
- Flammable/Explosive limits - lower:** Not available.
- Flammable/Explosive limits - upper:** Not available.

Autoignition temperature:	Not available.
Evaporation rate:	Not available.
Solubility in water:	Slight
Partition coefficient (n-octanol/water):	Not available.
VOC content:	< 3 %
Viscosity:	Not available.
Decomposition temperature:	Not available.

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions of storage and use.
Hazardous reactions:	Will not occur.
Hazardous decomposition products:	Oxides of carbon. Oxides of sulfur. Oxides of nitrogen. Irritating organic vapours.
Incompatible materials:	Strong oxidizing agents.
Reactivity:	Not available.
Conditions to avoid:	Elevated temperatures. Heat, flames, sparks and other sources of ignition. Store away from incompatible materials.

11. TOXICOLOGICAL INFORMATION

Relevant routes of exposure:	Skin, Inhalation, Eyes, Ingestion
-------------------------------------	-----------------------------------

Potential Health Effects/Symptoms

Inhalation: Inhalation of vapors or mists of the product may be irritating to the respiratory system.
Skin contact: Causes skin irritation. May cause allergic skin reaction.
Eye contact: Causes serious eye damage.
Ingestion: May cause gastrointestinal tract irritation if swallowed.

Hazardous Component(s)	LD50s and LC50s	Immediate and Delayed Health Effects
Dimethacrylate ester	None	Irritant, Allergen
Methacrylate monomer	None	No Records
2-Hydroxyethyl methacrylate	Oral LD50 (RAT) = 11.2 g/kg Oral LD50 (RAT) = 5,050 mg/kg	Irritant, Allergen
Polyurethane methacrylate resin	None	Irritant, Allergen
Acrylic acid	Oral LD50 (RAT) = 33.5 mg/kg Oral LD50 (RAT) = 2.5 g/kg Oral LD50 (RAT) = 193 mg/kg Oral LD50 (RAT) = 1,250 mg/kg Inhalation LC50 (RAT, 4 h) = 1,200 mg/l	Allergen, Corrosive, Irritant, Kidney, Liver
Hydroxyalkyl methacrylate	None	Irritant, Allergen
Cumene hydroperoxide	None	Allergen, Central nervous system, Corrosive, Irritant, Mutagen
Polyglycol dimethacrylate	None	Irritant, Allergen
Methacrylic acid	Oral LD50 (RABBIT) = 1,200 mg/kg Oral LD50 (RAT) = 1,060 mg/kg Oral LD50 (RAT) = 2,224 mg/kg Dermal LD50 (RABBIT) = 500 mg/kg Inhalation LC50 (RAT, 4 h) = 7.1 mg/l	Corrosive, Irritant, Allergen

Hazardous Component(s)	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Dimethacrylate ester	No	No	No
Methacrylate monomer	No	No	No
2-Hydroxyethyl methacrylate	No	No	No
Polyurethane methacrylate resin	No	No	No
Acrylic acid	No	No	No
Hydroxyalkyl methacrylate	No	No	No
Cumene hydroperoxide	No	No	No
Polyglycol dimethacrylate	No	No	No
Methacrylic acid	No	No	No

12. ECOLOGICAL INFORMATION

Ecological information: Not available.

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Follow all local, state, federal and provincial regulations for disposal.
Hazardous waste number: Not a RCRA hazardous waste.

14. TRANSPORT INFORMATION

The transport information provided in this section only applies to the material/formulation itself, and is not specific to any package/configuration.

U.S. Department of Transportation Ground (49 CFR)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

International Air Transportation (ICAO/IATA)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

Water Transportation (IMO/IMDG)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status: All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.
TSCA 12 (b) Export Notification: None above reporting de minimis
CERCLA/SARA Section 302 EHS: None above reporting de minimis
CERCLA/SARA Section 311/312: Immediate Health, Delayed Health
CERCLA/SARA Section 313: This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372). Acrylic acid (CAS# 79-10-7).
CERCLA Reportable quantity: Cumene hydroperoxide (CAS# 80-15-9) 10 lbs. (4.54 kg)
California Proposition 65: This product contains a chemical known in the State of California to cause cancer. This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Canada Regulatory Information

CEPA DSL/NDSL Status: One or more components are not listed on, and are not exempt from listing on either the Domestic Substances List or the Non-Domestic Substances List.

16. OTHER INFORMATION

This safety data sheet contains changes from the previous version in sections: New Safety Data Sheet format.

Prepared by: Sheila Gines, Regulatory Affairs Specialist
Issue date: 05/07/2014

DISCLAIMER: The data contained herein are furnished for information only and are believed to be reliable. However, Henkel Corporation and its affiliates ("Henkel") does not assume responsibility for any results obtained by persons over whose methods Henkel has no control. It is the user's responsibility to determine the suitability of Henkel's products or any production methods mentioned herein for a particular purpose, and to adopt such precautions as may be advisable for the protection of property and persons against any hazards that may be involved in the handling and use of any Henkel's products. In light of the foregoing, Henkel specifically disclaims all warranties, express or implied, including warranties of merchantability and fitness for a particular purpose, arising from sale or use of Henkel's products. Henkel further disclaims any liability for consequential or incidental damages of any kind, including lost profits.



Revision Number: 002.0

Issue date: 09/02/2014

1. PRODUCT AND COMPANY IDENTIFICATION

Product name:	LOCTITE 406 SURF. INSENS.INSTANT	IDH number:	135436
	AD. known as 406 Prism® Surface		
	Insensitive		
Product type:	Cyanoacrylate	Item number:	40640
Restriction of Use:	None identified	Region:	United States
Company address:	Contact information:		
Henkel Corporation	Telephone: (860) 571-5100		
One Henkel Way	MEDICAL EMERGENCY Phone: Poison Control Center		
Rocky Hill, Connecticut 06067	1-877-671-4608 (toll free) or 1-303-592-1711		
	TRANSPORT EMERGENCY Phone: CHEMTREC		
	1-800-424-9300 (toll free) or 1-703-527-3887		
	Internet: www.henkelna.com		

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

WARNING: BONDS SKIN IN SECONDS.
 COMBUSTIBLE LIQUID.
 CAUSES EYE IRRITATION.
 MAY CAUSE RESPIRATORY IRRITATION.

HAZARD CLASS	HAZARD CATEGORY
FLAMMABLE LIQUID	4
EYE IRRITATION	2B
SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE	3

PICTOGRAM(S)



Precautionary Statements

Prevention:	Keep away from heat, sparks, open flames, hot surfaces - no smoking. Avoid breathing vapors, mist, or spray. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves, eye protection, and face protection.
Response:	IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to remove. Continue rinsing. Call a poison control center or physician if you feel unwell. If eye irritation persists: Get medical attention. In case of fire: Use foam, dry chemical or carbon dioxide to extinguish.
Storage:	Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.
Disposal:	Dispose of contents and/or container according to Federal, State/Provincial and local governmental regulations.

Classification complies with OSHA Hazard Communication Standard (29 CFR 1910.1200) and is consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Component(s)	CAS Number	Percentage*
Ethyl 2-cyanoacrylate	7085-85-0	60 - 100
Thickener	Proprietary	1 - 5

* Exact percentage is a trade secret. Concentration range is provided to assist users in providing appropriate protections.

4. FIRST AID MEASURES

Inhalation:	Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.
Skin contact:	Do not pull bonded skin apart. Soak in warm soapy water. Gently peel apart using a blunt instrument. If skin is burned due to the rapid generation of heat by a large drop, seek medical attention. If lips are bonded, apply warm water to the lips and encourage wetting and pressure from saliva in mouth. Peel or roll lips apart. Do not pull lips apart with direct opposing force.
Eye contact:	Immediately flush with plenty of water for at least 15 minutes. Get medical attention. If eyelids are bonded closed, release eyelashes with warm water by covering with a wet pad. Do not force eye open. Cyanoacrylate will bond to eye protein and will cause a lachrymatory effect which will help to debond the adhesive. Keep eye covered until debonding is complete, usually within 1-3 days. Medical attention should be sought in case solid particles of polymerized cyanoacrylate trapped behind the eyelid caused abrasive damage.
Ingestion:	Ensure breathing passages are not obstructed. The product will polymerize rapidly and bond to the mouth making it almost impossible to swallow. Saliva will separate any solidified product in several hours. Prevent the patient from swallowing any separated mass.
Symptoms:	See Section 11.
Notes to physician:	Surgery is not necessary to separate accidentally bonded tissues. Experience has shown that bonded tissues are best treated by passive, non-surgical first aid. If rapid curing has caused thermal burns they should be treated symptomatically after adhesive is removed.

5. FIRE FIGHTING MEASURES

Extinguishing media:	Water spray (fog), foam, dry chemical or carbon dioxide.
Special firefighting procedures:	Wear a self-contained breathing apparatus with a full face piece operated in pressure-demand or other positive pressure mode.
Unusual fire or explosion hazards:	None
Hazardous combustion products:	Trace amounts of toxic and/or irritating fumes may be released and the use of breathing apparatus is recommended.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions:	Ventilate area. Do not allow product to enter sewer or waterways.
-----------------------------------	---

Clean-up methods:

Do not use cloths for mopping up. Flood with water to complete polymerization and scrape off the floor. Cured material can be disposed of as non-hazardous waste. Refer to Section 8 "Exposure Controls / Personal Protection" prior to clean up.

7. HANDLING AND STORAGE

Handling:

Prevent contact with eyes, skin and clothing. Do not breathe vapor and mist. Wash thoroughly after handling. Avoid contact with fabric or paper goods. Contact with these materials may cause rapid polymerization which can generate smoke and strong irritating vapors, and cause thermal burns.

Storage:

Keep in a cool, well ventilated area away from heat, sparks and open flame. Keep container tightly closed until ready for use.

For information on product shelf life contact Henkel Customer Service at (800) 243-4874.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous Component(s)	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Ethyl 2-cyanoacrylate	0.2 ppm TWA	None	None	None
Thickener	None	None	None	None

Engineering controls:

Use positive down-draft exhaust ventilation if general ventilation is insufficient to maintain vapor concentration below established exposure limits.

Respiratory protection:

Use NIOSH approved respirator if there is potential to exceed exposure limit(s).

Eye/face protection:

Safety goggles or safety glasses with side shields. Full face protection should be used if the potential for splashing or spraying of product exists.

Skin protection:

Use nitrile gloves and aprons as necessary to prevent contact. Do not use PVC, nylon or cotton.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Liquid
Color:	Clear, Colorless
Odor:	Sharp, Irritating
Odor threshold:	1 - 2 ppm
pH:	Not available.
Vapor pressure:	< 0.5 mm hg
Boiling point/range:	> 149 °C (> 300.2 °F)
Melting point/ range:	Not available.
Specific gravity:	1.1
Vapor density:	3
Flash point:	80 - 93 °C (176°F - 199.4 °F) Tagliabue closed cup
Flammable/Explosive limits - lower:	Not available.
Flammable/Explosive limits - upper:	Not available.
Autoignition temperature:	485 °C (905°F)
Evaporation rate:	Not available.
Solubility in water:	Polymerizes on contact with water.
Partition coefficient (n-octanol/water):	Not available.
VOC content:	< 2 %; < 20 g/l (California SCAQMD Method 316B) (Estimated)
Viscosity:	Not available.
Decomposition temperature:	Not available.

10. STABILITY AND REACTIVITY

Stability:	Stable under recommended storage conditions.
Hazardous reactions:	Rapid exothermic polymerization will occur in the presence of water, amines, alkalis and alcohols.
Hazardous decomposition products:	Toxic fumes.
Incompatible materials:	Water, Amines, Alkalis, Alcohols.
Reactivity:	Not available.
Conditions to avoid:	Spontaneous polymerization.

11. TOXICOLOGICAL INFORMATION

Relevant routes of exposure: Skin, Inhalation, Eyes

Potential Health Effects/Symptoms

Inhalation:	May cause respiratory tract irritation. Exposure to vapors above the established exposure limit results in respiratory irritation, which may lead to difficulty in breathing and tightness in the chest.
Skin contact:	May cause skin irritation. Bonds skin in seconds. Cyanoacrylates have been reported to cause allergic reaction but due to rapid polymerization at the skin surface, an allergic response is rare. Cyanoacrylates generate heat on solidification. In rare circumstances a large drop will burn the skin. Cured adhesive does not present a health hazard even if bonded to the skin.
Eye contact:	Irritating to eyes. Causes excessive tearing. Eyelids may bond.
Ingestion:	Not expected to be harmful by ingestion. Rapidly polymerizes (solidifies) and bonds in mouth. It is almost impossible to swallow.

Hazardous Component(s)	LD50s and LC50s	Immediate and Delayed Health Effects
Ethyl 2-cyanoacrylate	None	Irritant, Allergen, Respiratory
Thickener	None	Irritant

Hazardous Component(s)	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Ethyl 2-cyanoacrylate	No	No	No
Thickener	No	No	No

12. ECOLOGICAL INFORMATION

Ecological information: Not available.

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Dispose of according to Federal, State and local governmental regulations.
Hazardous waste number: Not a RCRA hazardous waste.

14. TRANSPORT INFORMATION

The transport information provided in this section only applies to the material/formulation itself, and is not specific to any package/configuration.

U.S. Department of Transportation Ground (49 CFR)

Proper shipping name: Combustible liquid, n.o.s. (Cyanoacrylate ester)
Hazard class or division: Combustible Liquid
Identification number: NA 1993
Packing group: III

International Air Transportation (ICAO/IATA)

Proper shipping name: Aviation regulated liquid, n.o.s. (Cyanoacrylate ester)
Hazard class or division: 9
Identification number: UN 3334
Packing group: III
Exceptions: Primary packs containing less than 500ml are unregulated by this mode of transport and may be shipped unrestricted.

Water Transportation (IMO/IMDG)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status: All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.
TSCA 12 (b) Export Notification: None above reporting de minimis
CERCLA/SARA Section 302 EHS: None above reporting de minimis
CERCLA/SARA Section 311/312: Immediate Health, Delayed Health, Fire, Reactive
CERCLA/SARA Section 313: None above reporting de minimis
California Proposition 65: No California Proposition 65 listed chemicals are known to be present.

Canada Regulatory Information

CEPA DSL/NDSL Status: Contains one or more components listed on the Non-Domestic Substances List. All other components are listed on or are exempt from listing on the Domestic Substances List. Components listed on the NDSL must be tracked by all Canadian Importers of Record as required by Environment Canada. They may be imported into Canada in limited quantities. Please contact Regulatory Affairs for additional details.

16. OTHER INFORMATION

This safety data sheet contains changes from the previous version in sections: New Safety Data Sheet format.

Prepared by: Catherine Bimler, Regulatory Affairs Specialist
Issue date: 09/02/2014

DISCLAIMER: The data contained herein are furnished for information only and are believed to be reliable. However, Henkel Corporation and its affiliates ("Henkel") does not assume responsibility for any results obtained by persons over whose methods Henkel has no control. It is the user's responsibility to determine the suitability of Henkel's products or any production methods mentioned herein for a particular purpose, and to adopt such precautions as may be advisable for the protection of property and persons against any hazards that may be involved in the handling and use of any Henkel's products. In light of the foregoing, Henkel specifically disclaims all warranties, express or implied, including warranties of merchantability and fitness for a particular purpose, arising from sale or use of Henkel's products. Henkel further disclaims any liability for consequential or incidental damages of any kind, including lost profits.

MATERIAL SAFETY DATA SHEET Acc. to article 31 and Annex II of the EU REACH Regulation

Date of issue: 06.11. 2012

Version 01 of 01.10.2012; Revision 0

LINOMAX Special-Grease – semi-synthetic

Seite 1/4

1. SUBSTANCE-/PREPARATION AND COMPANY IDENTIFICATION

- 1.1 CHEMICAL NATURE /APPLICATION/CHARACTER: White lubricating grease paste for industrial use
(Lubricant and additives)
- 1.2 ADDRESS OF PRODUCER/SUPPLIER: Schunk GmbH & Co. KG
Bahnhofstraße 106-134
D-74348 Lauffen a.N.
- Germany -
Precode Germany: 0049
(0)7133/103-0 (Schunk)
- 1.3 EMERGENCY CONTACT

2. HAZARDS IDENTIFICATION

- 2.1 HAZARDOUS TO HEALTH
R37/38 Irritating to respiratory system and skin
R41 Risk of serious damage to eyes
This health hazard assessment is based on a consideration of the composition of this product. This product is not hazardous to health by using as defined. Nevertheless, normal hygiene rules by working with chemical products should be considered. Extreme high exposition may lead to skin- and eye irritation.
- 2.2 SAFETY RISKS
No risk by using as defined
- 2.3 RISKS FOR ENVIRONMENT
- 2.4 FURTHER INFORMATIONS

3. COMPOSITION / INFORMATION OF INGREDIENTS

- 3.1 MATERIAL:
- 3.2 CAS-No.:
- 3.3 FORMULATION: X
- 3.4 CHEMICAL CHARACTER: Lubricating grease based on severe treat mineral oil, synthetic oil, solid lubricants, thickener and additives
- 3.5 DANGEROUS INGREDIENT
- | Name in acc. to EG | CAS-No. | EINECS-No. | Classification | R-phrases | quantity |
|--------------------|-----------|------------|----------------|-------------|----------|
| Calciumhydroxid | 1305-62-0 | 215-137-3 | Xi | R 37/38, 41 | < 30 |

4. FIRST AID MEASURES

- 4.1 CONTACT WITH SKIN Remove contaminated clothing. Wash skin with soap and water. If symptoms develop, obtain medical attention. Use a skin creme for receiving the natural skin film.
- 4.2 CONTACT WITH EYE If substance has gone into the eyes, immediately wash out with plenty of water or previn solution until medical assistance is provided. Retract eyelids often. Contact a doctor.
- 4.3 INGESTION Do not induce vomiting. Wash out mouth with water. Obtain medical attention immediately.
- 4.4 INHALATION Not expected to be a problem. No first aid should be needed
- 4.5 ADDITIONAL INFORMATION Remove patient from exposure, keep warm and at rest. Obtain medical attention if ill effects occur.
High pressure accidental injection through the skin requires immediate medical attention for possible incision, irrigation and / or debridement.

5. FIRE-FIGHTING MEASURES

- 5.1 SUITABLE EXTINGUISHING MEDIA Not classed as flammable. If involved in a fire, it may emit noxious and toxic fumes.
Use foam, carbon dioxide (CO₂), dry chemical or water fog
- 5.2 UNSUITABLE EXTINGUISHING MEDIA Water in beam-form
- 5.3 SPECIAL DANGER In case of fire and/or explosion do not breath fumes.
- 5.4 SPECIAL PROTECTION EQUIPMENT Product may give off toxic fumes in a fire. Firefighters must wear breathing apparatus and protective clothing.
During fire or at very high heat thermal break down of product involves decompositions-products such as carbon oxide, incompletely burned carbon, formaldehyde, phosphorus products ...
- 5.5 FURTHER INFORMATION Water may be used to cool closed containers to prevent pressure build up and to keep fore exposed containers cool.

LINOMAX Special-Grease – semi-synthetic

6 ACCIDENTIAL RELEASE MEASURES

- 6.1 PERSONAL PRECAUTIONS /PROTECTIVE Use protection standard as usual by working with chemicals. Avoid plug-building. Keep away unprotected people. Avoid contact with eyes and skin. Avoid breathing vapours. Wear proper protective equipment.
- 6.2 ENVIRONMENTAL PRECAUTIONS Do not release to the environment. Do not allow large quantities to enter drains or surface waters
- 6.3 METHODS OF CLEANING/ BESEITIGUNG Absorb spillages in sand, earth or any suitable absorbent material. Transfer to a container for disposal. In case of bigger quantities inform public authority
- 6.4 FURTHER INFORMATIONS The spilled product produces an extremely slippery surface

7 HANDLING AND STORAGE

- 7.1 HINTS FOR SAFE HANDLING Normal security rules for organic products with al flash point higher than 100°C. Avoid eye and skin contact. High pressure injection under the skin may occur due to the rupture of pressurized lines. Always seek medical attention. Do not breathe spray or mist. Do not empty into drains. Ventilation is recommended
- 7.2 HINTS FOR STORAGE Do not storage in open or unlabeled containers. Store away from strong oxidizing agents or combustible material
- 7.3 REQUIREMENTS TO STORAGE ROOMS-/CONDITIONS see 7.2, no special requirements, store dry Avoid contact with air.
- 7.4 HINTS FOR CONNECTING-STORAGE see 7.2, no special requirements
- 7.5 FURTHER INFORMATION Specific use: Refer to technical data sheet
Keep container closed

8 EXPOSURE CONTROLLS / PERSONAL PROTECTION EQUIPMENT

- 8.1 TECHNICAL PROTECTIVE MEASURES No special requirements under ordinary conditions of use and with adequate ventilation.
- 8.2 EXPOSURE CONTROL LIMITS HINT: All powders are bounded in oil, so by use as defined, no powder-dust is possible
- 8.2.1 MAK-VALUE

NAME	CAS-No.	EINIECS-NO.	mg/m ³
Calciumhydroxid	1305-62-0	215137-3	5 (as dust)
- 8.2.2 COMPANY-INTERNAL LIMITS none special. See section 7.1
- 8.3 RESPIRATORY PROTECTION No special requirements under ordinary conditions of use and with adequate ventilation. If aerosol or mist (by spraying or similar activities) may be generated, a suitable respirator must be worn. Depending on exact conditions, use mask with filter or self-contained respirator. The coice of a filter depends on the amount and type of chemical at the working place. Contact your respiratory protection supplier for filter characteristics.
- 8.3.1 SKIN-PROTECTION If prolonged or repeated skin contact is likely, oil impervious gloves must be worn. Contactv supplier of protecting gloves for suitable material (e.g. PVA) Good personal hygiene practices should always be followed.
- 8.3.2 EYE-PROTECTION General eye contact is unlikely with this type of material. If eye contact is likely, safety glases with side shields or chemical type of goggles should be worn.
- 8.3.3 INHALATION-PROTECTION General inhalation is unlikely with this type of material.
- 8.3.4 WEAR as usual by working with organic chemical products
- 8.4 FURTHER INFORMATION These precautions are for room temperature handling. Different conditions (e.g. elevated temperatures may require added precautions)

Date of issue: 06.11. 2012

Version 01 of 01.10.2012; Revision 0

LINOMAX Special-Grease – semi-synthetic

Seite 3 / 4

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 <u>PHYSICAL STATE:</u>		grease-paste	
9.2 <u>COLOUR</u>		white-beige-coloured	
9.3 <u>ODOUR</u>		weak	
9.4 <u>CHANCE IN PHYSICAL STATE</u>	<u>MELTING POINT</u>	not determined	
	<u>BOILING POINT/RANGE</u>	> 300°C	
	<u>DROPPING POINT</u>	> 180 °C	
9.5 <u>FLASH POINT</u>		> 200 °C	DIN 51376
9.6 <u>IGNITION TEMPERATURE</u>		not determined	
9.7 <u>EXPLOSION LIMITS</u>	<u>LOWER</u>	not determined	
	<u>UPPER</u>		
9.8 <u>VAPOUR PRESSURE</u> (20°C)		not determined	
9.9 <u>DENSITY</u> (20°C; 1bar)		appr. 1,1 g/cm ³	
9.10 <u>SOLUBILITY IN WATER</u> (20°C)		negligible	
9.11 <u>pH-VALUE</u> (20°C)		not determined	

10 STABILITY AND REAKTIVITY

10.1 <u>REACTIVITY</u>	None known
10.2 <u>STABILITY</u>	Stable at normal using conditions. At temperatures above 580° decomposition of Calciumhydroxide to Calciumoxide and water
10.3 <u>POSSIBILITY OF HAZARDOUS REACTIONS</u>	None known
10.4 <u>THERMAL DECOMPOSITION</u>	Stable. Avoid extreme heat.
10.5 <u>CONDITIONS TO BE AVOIDED</u>	Extreme heat
10.6 <u>MATERIALS TO BE AVOIDED</u>	Can react with strong oxidising agents
10.7 <u>HARZARDOUS DECOMPOSITION PRODUCTS</u>	None known-by normal using. In case of decomposition different decomposition products developed. The composition of these products depends on exact decomposition codlitions. Carbon oxide and traces of incompletely burned carbon compounds, formaldehyde, phosphorus products
	CO ₂ /CO, elemental oxides, metal oxides and other undefined decomposition products (formaldehyde, phosphorus products..)
	IN CASE OF FIRE
10.8 <u>FURTHER INFORMATIONS</u>	none

11 TOXICOLOGICAL INFORMATIONS

ACUTE TOXICITY:	
11.1 <u>ORAL TOXICITY</u> LD50	Practically non-toxic (LD 50: greater than 2000 mg/kg; based on testing of similar products)
11.2 <u>SKIN IRRITATION</u>	Prolonged contact may lead to slight irritation (Primary Irritation-Index: greater than 0,5 but less than 3; Based on testing of similar products)
11.3 <u>EYE IRRITATION</u>	Risk of serious damage to eyes*
11.4 <u>INHALATION</u>	No adverse effects are normally expected (under ordinary conditions not applicable)
11.5 <u>ON INGESTON</u>	Smallest quantities reaching the lungs through swallowing or subsequent vomiting may result in lung oedema or pneumonia
CHRONIC TOXICITY:	
11.6 <u>ON SKIN CONTACT:</u>	Can irritate on prolonged or repeated contact
11.7 <u>IF INHALED</u>	No adverse effects normally expected
11.8 <u>ON INGESTION</u>	Repeated swallowing may cause gastrointestinal irritation and disturbance
11.9 <u>OTHER INFORMATIONS</u>	*)This product contains powders, which are hazardous by inhalations. However this is not relevant due to the physical form of the product, where powders are not in a respirable form.

12 ECOLOGICAL INFORMATION

12.1 <u>AKUTE FISH-TOXICITY</u> (LC50/96 h)	> 100 mg/l (base-oil; OECD 203)
12.2 <u>EFFECT-CONCENTRATION</u> (EC50/24 h)	> 10 g/l (base-oil; DIN 38412, p. 8)
12.3 <u>PERSISTENCE AND EGRADABILITY</u>	Solid material, insoluble in water, no adverse effects are predicted
12.4 <u>BIOACCUMULATION</u>	No bioaccumulation potential
<u>FURTHER INFORMATIONS</u>	This product is expected to be inherently biodegradable. There is no evicence to suggest bioaccumulation will occur. It may be harmful to aquatic organisms.

LINOMAX Special-Grease – semi-synthetic

13 DISPOSAL CONSIDERATIONS

PRODUCT AND PACKAGING

Dispose in accordance with local and state regulations. According to European waste catalogue, waste codes are not product specific, but application specific. Waste codes should be assigned by the user, preferable in discussion with the waste disposal authorities

14 TRANSPORT INFORMATIONS

- 14.1 UN-NR: Not regulated
- 14.2 GGVS/ADR: Not regulated
- 14.3 GGVE/RID Not regulated
- 14.4 GGVBinSch/ADNR: Not regulated
- 14.5 GGVSEE / IMDG - CODE Not regulated
- 14.6 ICAO / IATA - DRG Not regulated
- 14.7 FLASH-POINT > 200°C
- 14.8 TECHN. NAME STREET TRANSPORT NOT RERSTRICTED
- 14.9 ADDITIONAL INFORMATIONS Not classified as hazardous for transport. EU labelling not required

15 REGULATORY INFORMATIONS

15.1 MARKING TO EEC REGULATIONS

- X_i: Irritant
- R-phrases
- R37/38: Irritating to respiratory system and skin
- R41: Risk of serious damage to eyes
- S-phrases:
- S 2: Keep out of the reach of children
- S 24/25: Avoid contact with skin and eyes
- S 26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
- S 37/39: Wear suitable gloves and eye/face protection
- S 46: If swallowed, seek medical advice immediately and show this container or label

PRODUCT CONTAINS

15.2 NATIONAL REGULATIONS

- VOC-Content: 0%
- Flammability: not flammable
- TA - LUFT: no informations available
- WGK 1 (in accordance to VCI)

15.3 SAFETY, HEALTH AND ENVIRONMENTAL REGULATION

- DSL All ingrediants are listed or exempt
- TSCA All chemical substances in this material are included on or exempted form listing on the TSCA Inventory of Chemical Substance
- AICS All ingrediants are listed, exempt or notified
- IECSC All ingrediants are listed or exempt
- EINECS All ingrediants are listed, exempt or notified (ELINCS)
- KECL All ingrediants are listed, exempt or notified
- PICCS All ingrediants are listed, exempt or notified

16 FURTHER INFORMATIONS

16.1 R-phrases mentioned in this documentb (Not marking of the product)

- R37/38 Irritating to eyes and skin
- R41 Risk of serious damage to eyes

16.1 EDITOR Product safety department

16.2 VERSION REPLACES VERSION : 01 dd. 01.03.2009

The informations are based on our knowledge at present time and describe the product for safety requirements. The safety data sheet therefore has not the meaning to assure product properties. The datas don't justify a law contract. The product is only for industrial use.

This product safety data sheet was prepared in compliance with article 31 Annex II of the EU REACH Regulation as well as its relevant amendements, on the approximation of laws, regulations and administrative provisions relative to the classification, packaging and laelling of dangerous substance and preparations.

It is the responsibility of persons in receipt of this safety data sheet to ensure, that the information containe in this sheets is properly read and understood by all people who may use, handle, dipose or in any way come in contact with this product. If the recipient subsequently produces formulations containing this product, it is the recipient's sole responsibility to ensure the transfer of all relevant information from this product to their own safety data sheet.

All informations and instructions provided in this safety data sheet are based on current state of scientific and technical knowledge at the date indicated on the present SDS. Microgleit shall not be held responsible for any defect in the product covered by this safety data sheet, should the existence of such defect not be detecable considering the current state of scientific and technical knowledge.

As stated above, this safety data sheet has been prepared in compliance to applicable European law. If you purchase this product outside of Europe, where compliance laws may differ, you should ask Microgleit to the availability of a safety data sheet of this country. Please note that the content of the safety data sheet – even for the same product – could be different – reflecting the different compliance requirements.

MATERIAL SAFETY DATA SHEET

Manufactured For: Schaeffer Mfg. Company		Emergency Response Number:				
Address: 102 Barton Street		314-865-4105 or				
Address: St. Louis, MO 63104		800-325-9962 SILVER STREAK				
SECTION 1 - PRODUCT INFORMATION						
Chemical Family: Petroleum hydrocarbons & additives		Trade Name: #279 Spindle Compound #2				
Formula: Proprietary mixture						
SECTION 2 - HAZARDOUS INGREDIENTS						
COMPONENTS-CHEMICAL NAMES AND COMMON NAMES	CAS Number	%	Exposure Limits			
			TVL		PEL	
			ppm	mg/m ³	ppm	mg/m ³
Petroleum Base Oil	64742-54-7, 64742-65-0, 64742-16-1	66-68		5.0		5.0
Polyalphaolefin Synthetic Base Fluids	68037-01-4	15-17		5.0		5.0
Molybdenum Disulfide	1317-33-5	1-2		10		
Antimony Dithiocarbamate	15890-52-5	1-3		0.5		0.5
Graphite	7782-42-5	1-2		2		
Zinc Dipenthyldithiocarbamate	15337-18-5	0.5	N.E.	N.E.	N.E.	N.E.
Acetylene Black	1333-86-4			3.5		3.5
Section 3 - PHYSICAL DATA						
Boiling Point:	>600°F/315.5°C	Specific Gravity:	1.02			
Vapor Pressure (mm, Hg):	<.1	% Volatile:	Not Determined			
Vapor Density (Air = 1):	Not Determined	Evaporation Rate: (=1)	Not Applicable			
Solubility in Water:	Negligible	pH:	Not Applicable			
Appearance and Odor: Black color, tacky, petroleum odor.						
SECTION 4 - FIRE AND EXPLOSION HAZARD DATA						
Flash Point (Method) °F/°C: 518°F/270°C C.O.C. (ASTM D-92)		Flammability Limits UEL & LEL: ---- Not Determined				
Extinguishing Media: Carbon dioxide foam, dry chemical foam, sand, earth, waterfog.						
Special Fire Fighting Procedures: For fires involving this material, do not enter any enclosed or confined space without protective equipment including self-contained breathing apparatus.						
Unusual Fire & Explosion Hazards: None expected.						
SECTION 5 - REACTIVITY HAZARD DATA						
STABILITY	<input checked="" type="checkbox"/> STABLE	<input type="checkbox"/> UNSTABLE	Hazardous Decomposition <input type="checkbox"/> WILL <input checked="" type="checkbox"/> WILL NOT OCCUR			
Conditions to Avoid: High heat, high energy ignition sources						
Incompatibility (Mat. to avoid): Strong oxidizing agents						
Hazardous Decomposition Products: Oxides of carbon, sulfur, antimony and nitrogen.						
Conditions to Avoid: None						
SECTION 6 - HEALTH HAZARD DATA						
Threshold Limit Value and Sources: 5.0/mg/m ³ for oil mist. OSHA & ACGIH.						
Acute Effects of Overexposure:						
Ingestion:	Nausea and Diarrhea. Tackiness agents in this product may be possibly coagulated by stomach acids.					
Eye Contact:	Irritation and redness to eyes					
Skin Contact:	Prolonged or repeated skin contact may cause a mild skin irritation.					
Inhalation:	Vapors can be given off under high heat conditions excessive breathing of vapors can cause irritation of the respiratory tract.					
CHRONIC EFFECTS OF OVEREXPOSURE: If ingested in large amounts or repeatedly, damage to the cardiovascular system and respiratory tract can occur.						
Emergency and First Aid Procedures:						
Swallowing:	If a large volume of this material is swallowed, give a large amount of water to drink. Do not induce vomiting. Call a physician. Treat medically for possible abdominal blockage.					
Skin:	Wash thoroughly with soap and water. Launder contaminated clothing.					
Inhalation:	Remove to fresh air. If breathing is irregular or has stopped, start artificial respiration or administer oxygen if available.					
Eyes:	Flush eyes with clear, cool, clean water for 15 minutes. Seek medical attention immediately					
SECTION 7 - SPILL OR LEAK PROCEDURES						
Environmental Impact: This material is not expected to present any environmental problems other than those associated with oil spills. If spilled into a watercourse, call the Coast Guard Toll Free No. 800-424-8802.						
Procedures To Be Taken if Material is Released or Spilled: Absorb spills with absorbent with clay, diatomaceous earth or other suitable material. Keep out of sewers and watercourses.						
Waste Disposal Method: Dispose of in accordance with all applicable federal, state and local laws and regulations.						
SECTION 8 - SPECIAL PROTECTION INFORMATION						
Respiratory Protection:	None required under ordinary conditions of use.					
Ventilation:	No special requirement under ordinary conditions of use and with adequate ventilation.					
Eye Protection:	Goggles or face shield.					
Protective Clothing:	Oil resistant gloves.					

SECTION 9 -- SPECIAL PRECAUTIONS				
Precautions To Be Taken In Handling and Storage: Keep container closed when not in use. Do not handle or store near heat, spark, flame or strong oxidizers.				
Special Comments: Remove oil soaked clothing, launder before reuse. Wash skin thoroughly with soap and water after handling. Keep away from food and feed products.				
SECTION 10 -- ADDITIONAL HEALTH AND TOXICOLOGICAL DATA				
HMIS & NFPA Ratings: Health = 1 Fire = 1 Reactivity = 0				
This product does not contain any chemicals listed on the National Toxicology Program's Annual Reports, the International Agency for Cancer Research's Monographs or OSHA's 1910.10 subpart Z list.				
This product does not contain any of the chemicals found on the State of California's Proposition 65 list as potential reproductive toxins or cancer causing agents.				
SARA Title III Information:				
This product contains 1-3% antimony dithiocarbamate CAS#15890-52-5 and 0.5% Zinc Dipentylidithiocarbamate CAS#15337-18-5. Product RQ for stationary source, to release the RQ for the listed compounds is as follows:				
Component	%	RQ Value	Description	Product RQ
Antimony dithiocarbamate	1-3	5000 lb.	Antimony & cpds.	250,000 lbs.
Zinc Dipentylidithiocarbamate	0.5	1000 lbs.	Zinc & Zinc cpds.	23,553 lbs.

Although the information and recommendations set forth herein (hereafter referred to as information) are presented in good faith and believed to be accurate and factual as of the date hereof, Schaeffer Mfg. Company makes no representation as to the completeness or accuracy thereof. Information is supplied upon the condition that the person receiving the same will make their own determination as to its safety and suitability for their purposes prior to use. In no event will Schaeffer Mfg. Company be responsible for damages of any natures whatsoever resulting from the use or reliance upon information. **No representation or warranty, either expressed or implied, of merchantability or fitness for a particular purpose is made with respect to information of the product to which the information refers.**



Material Safety Data Sheet - MSDS

Section 1. Chemical Product and Company Identification

Product name	Classification	Classification
AL-731	CSA:	AWS:
Description	: Nozzle gel for MIG gun nozzles	Generic Code : ALG902
<u>In case of emergency</u>	: 1-514-878-1667	Date of issue : 01/10/2014
Supplier	: Air Liquide Canada Inc., 1250, René-Lévesque Ouest, Suite 1700, Montréal, QC H3B 5E6	

Section 2. Hazards Identification

Physical state and Appearance : Solid. [Gel.]

Emergency overview : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.

WARNING!
ELECTRIC SHOCK can kill.
FUMES AND GASES can be dangerous to your health.
ARC RAYS can injure eyes and burn skin.
NOT EXPECTED TO PRODUCE SIGNIFICANT ADVERSE HEALTH EFFECTS WHEN THE RECOMMENDED INSTRUCTIONS FOR USE ARE FOLLOWED.

Routes of entry : Dermal contact.

Potential acute health effects

Eyes : Slightly hazardous by the following route of exposure: of eye contact (irritant).

Skin : Slightly hazardous by the following route of exposure: of skin contact (irritant).

Inhalation : Non-hazardous in case of inhalation.

Ingestion : Since the product (welding fumes) is a gas and that it is mostly probable that it will be inhaled more than ingested, please consider first to look at the preventive measures in case of inhalation.

Potential chronic health effects :

Carcinogenicity

Not available.

Mutagenic effects Not available.

Teratogenic effects: Not available.

Medical conditions aggravated : None known.
by over-exposure

(* See Abbreviations (section 16).

Section 3. Composition, Information on Ingredients

Name	CAS #	% by weight	UN number
------	-------	-------------	-----------

No hazardous ingredient.

The fumes emitted by the electrodes, in use, are hazardous. This MSDS is written for workers using these electrodes.

Section 4. First Aid Measures

Eye contact	: Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention if symptoms occur.
Skin contact	: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.
Inhalation	: Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms occur.
Ingestion	: Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

Section 5. Fire Fighting Measures

- Flammability of the product : Non-flammable.
Explosibility : Not considered to be a product presenting a risk of explosion.
Fire-fighting media and instructions : Use an extinguishing agent suitable for the surrounding fire.

Section 6. Accidental Release Measures

- Small/Large Spill and Leak : Use appropriate tools to transfer the spilled solid to a convenient waste disposal container.

Section 7. Handling and Storage

- Handling : Avoid breathing dust.
Storage : Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls, Personal Protection

- Engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protection

- Eyes : Safety glasses with side shields. Face shield with radiation shielding.
Body : Full suit. Fire resistant.
Respiratory : Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear a canister breathing apparatus (respirator) or a supplied-air respirator, when required, to weld in a confined space or when room exhaust or ventilation does not keep exposure below the acceptable values.
Hands : Gloves. Fire resistant.
Feet : Metal cap, safety boots.

Occupational exposure limits

No exposure limit value known.

Section 9. Physical and Chemical Properties

- Physical state and Appearance : Solid. [Gel.]
Color : Blue.
Odor : Odorless.
Melting/freezing point : 68 to 77°C (154.4 to 170.6°F)
Specific gravity : 0.815 to 0.88 [Water = 1]
Solubility : Insoluble in the following materials: cold water and hot water.

Section 10. Stability and Reactivity

- Stability and reactivity : The product is stable.
Hazardous decomposition products : Metallic oxides. carbon oxides (CO, CO₂) Arc radiation can support the production of ozone and nitrogen oxides.
Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological Information

- Chronic effects and other toxic effects on humans : Not available.
Slightly hazardous by the following route of exposure: of skin contact (irritant), of eye contact (irritant).
Non-hazardous in case of inhalation.

Section 12. Ecological Information

- Ecotoxicity data
Products of degradation : carbon oxides (CO, CO₂) and water

Section 13. Disposal Considerations

- Waste information : Waste must be disposed of in accordance with federal, state and local environmental control regulations. Recycle, if possible.
Consult your local or regional authorities.

Section 14. Transport Information

No transport class is found applicable to this product.

Section 15. Regulatory Information

HCS Classification : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Not regulated.

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption:** All components are listed or exempted.
United States inventory (TSCA 8b): All components are listed or exempted.
SARA 302/304: No products were found.
SARA 311/312 Hazards Identification: Not regulated.

State regulations : **Massachusetts** : None of the components are listed.
New York : None of the components are listed.
New Jersey : None of the components are listed.
Pennsylvania : None of the components are listed.
None of the components are listed.

WHMIS (Canada) : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Not controlled under WHMIS (Canada).
CEPA Toxic substances: None of the components are listed.
Canadian ARET: None of the components are listed.
Canadian NPRI: None of the components are listed.
Alberta Designated Substances: None of the components are listed.
Ontario Designated Substances: None of the components are listed.
Quebec Designated Substances: None of the components are listed.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Section 16. Other Information

Label requirements : See Section 2.

Hazardous Material Information System (U.S.A.) : Health: 1 Fire: 0 Reactivity: 0

National Fire Protection Association (U.S.A.) : Health: 1 Fire: 0 Reactivity: 0 Other: None

References : - 29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. - CRC Handbook of chemistry and physics, 67th edition. CRC Press inc., Boca Raton, Florida. - Manufacturer's Material Safety Data Sheet. ANSI Z400.1, MSDS Standard, 2004. ANSI Z49.1 Safety in Welding and Cutting, The American Welding Society, P.O. Box 351040, Miami, FL 33135. Canadian Standard Association, CSA W117.2, Code for Safety in Welding and Cutting, 2003.

Abbreviations and acronyms : **ACGIH: American Conference of Governmental Industrial Hygiene.**
ACGIH-A1-Confirmed Human Carcinogen.
ACGIH-A2-Suspected Human Carcinogen.
ACGIH-A3-Animal Carcinogen.
ACGIH-A4-Not Classifiable as a Human Carcinogen.
ACGIH-A5-Not suspected as a Human Carcinogen.
IARC: International Agency for Research on Cancer.
IARC 1: Proven.
IARC 2A: Probable for human.
IARC 2B: Possible for human.
IARC 3: Not classifiable for human.
NIOSH: National Institute of Occupational Safety and Health.
NIOSH +: Proven.
NIOSH: None.
EU: European Union
Carc. 1A : May cause cancer (Known)
Carc. 1B : May cause cancer (Presumed)
Carc. 2 : Suspected of causing cancer
NTP: National Toxicology program.
NTP 1: Known to be human carcinogens.
NTP 2: Reasonably Anticipated to be human carcinogens.

Responsible name : IHS

Date of previous issue : 01/15/2011

Version : 6

Notice to reader

THE INFORMATION, RECOMMENDATIONS AND DATA CONTAINED IN THIS DOCUMENT ARE INTENDED TO BE USED BY PROPERLY TRAINED AND QUALIFIED PERSONNEL ONLY AND AT THEIR SOLE RISKS AND DISCRETION. THE INFORMATION, RECOMMENDATIONS AND DATA HEREIN CONTAINED ARE DERIVED FROM SOURCES WHICH WE BELIEVE TO BE RELIABLE. HOWEVER, AIR LIQUIDE CANADA INC. MAKES NO REPRESENTATION AND GIVES NO WARRANTY OF ANY KIND WHATSOEVER WITH RESPECT TO THEIR ACCURACY OR COMPLETENESS AND ASSUMES NO LIABILITY FOR DAMAGES OR LOSS ARISING DIRECTLY OR INDIRECTLY FROM THEIR USE, WHETHER PROPER OR IMPROPER.

NONE.

Product Name: Stargon SS

MSDS# E-6212-E

Date: Oct. 15, 2013

Praxair Material Safety Data Sheet

1. Chemical Product and Company Identification

Product Name: Stargon SS	Trade Name: Stargon SS
Product Use: Many.	
Chemical Name: Carbon Dioxide & Inert Gases	Synonym: Not applicable.
Chemical Formula: Not applicable.	Chemical Family: Not applicable.
Telephone: Emergencies: * 1-800-363-0042	Supplier /Manufacture: Praxair Canada Inc. 1 City Centre Drive Suite 1200 Mississauga, ON L5B 1M2 Phone: 905-803-1600 Fax: 905-803-1682

**Call emergency numbers 24 hours a day only for spills, leaks, fire, exposure, or accidents involving this product. For routine information, contact your supplier or Praxair sales representative.*

2. Composition and Information on Ingredients

INGREDIENTS	% (VOL)	CAS NUMBER	LD ₅₀ (Species & Routes)	LC ₅₀ (Rat, 4 hrs.)	TLV-TWA (ACGIH)
Carbon dioxide	1-5	124-38-9	Not available.	Not available.	5000 ppm
Nitrogen	1-5	7727-37-9	Not available.	Not available.	Simple asphyxiant.
Argon	90-98	7440-37-1	Not available.	Not available.	Simple asphyxiant.

3. Hazards Identification

Emergency Overview

CAUTION! High-pressure gas. Can cause rapid suffocation. May cause dizziness and drowsiness. Self-contained breathing apparatus may be required by rescue workers.

ROUTES OF EXPOSURE: Inhalation.

EFFECTS OF A SINGLE (ACUTE) OVEREXPOSURE:

INHALATION: Asphyxiant. Effects are due to lack of oxygen. Moderate concentrations may cause headaches, drowsiness, dizziness, excitation, excess salivation, vomiting, and unconsciousness. Lack of oxygen can kill.

SKIN CONTACT: No harm expected from vapour.

SKIN ABSORPTION: No evidence of adverse effects from available information.

SWALLOWING: A highly unlikely route of exposure. This product is a gas at room temperature and pressure.

EYE CONTACT: Vapour may cause a stinging sensation.

EFFECTS OF REPEATED (CHRONIC) OVEREXPOSURE:

No evidence of adverse effects from available information.

OTHER EFFECTS OF OVEREXPOSURE:

Damage to retinal ganglion cells and central nervous system may occur.

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE:

Repeated or prolonged exposure is not known to aggravate medical condition.

SIGNIFICANT LABORATORY DATA WITH POSSIBLE RELEVANCE TO HUMAN HEALTH HAZARD EVALUATION:

None currently known.

CARCINOGENICITY:

Not listed as carcinogen by OSHA, NTP or IARC.

4. First Aid Measures

INHALATION:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, qualified personnel may give oxygen. Call a physician.

SKIN CONTACT:

This product is a gas.

SWALLOWING:

This product is a gas at normal temperature and pressure.

EYE CONTACT:

This product is a gas.

NOTES TO PHYSICIAN:

There is no specific antidote. Treatment of over-exposure should be directed at the control of symptoms and the clinical condition.

5. Fire Fighting Measures

FLAMMABLE :	No.	IF YES, UNDER WHAT CONDITIONS?	Not applicable.
FLASH POINT (test method)	Not applicable.	AUTOIGNITION TEMPERATURE	Not applicable.
FLAMMABLE LIMITS IN AIR, % by volume:	LOWER: Not applicable.	UPPER:	Not applicable.

EXTINGUISHING MEDIA:

This mixture cannot catch fire. Use media appropriate for surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES:

CAUTION! Evacuate all personnel to a safe distance. Immediately deluge containers with water spray from maximum distance until cool, then move containers away from fire area if without risk.

UNUSUAL FIRE AND EXPLOSION HAZARD:

Gas cannot catch fire. Container may rupture due to heat of fire. No part of a container should be subjected to a temperature higher than 52 C. Most containers are provided with a pressure relief device designed to vent contents when they are exposed to elevated temperature.

HAZARDOUS COMBUSTION PRODUCTS:

These products are carbon oxides (CO, CO₂), nitrogen oxides (NO, NO₂...).

SENSITIVITY TO IMPACT:

Avoid impact against container.

SENSITIVITY TO STATIC DISCHARGE:

Not applicable.

6. Accidental Release Measures**STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:**

CAUTION! Evacuate all personnel from danger area. Use self-contained breathing apparatus where needed. Shut off flow if you can do so without risk. Ventilate area or move cylinder to a well-ventilated area. Test for sufficient oxygen, especially in confined spaces, before allowing reentry.

WASTE DISPOSAL METHOD:

Prevent waste from contaminating the surrounding environment. Keep personnel away. Discard any product, residue, disposable container, or liner in an environmentally acceptable manner, in full compliance with federal, provincial, and local regulations. If necessary, call your local supplier for assistance.

7. Handling and Storage**PRECAUTIONS TO BE TAKEN IN STORAGE:**

Store and use with adequate ventilation. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Store only where temperature will not exceed 52 C. Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.

PRECAUTIONS TO BE TAKEN IN HANDLING:

Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Open valve slowly. If valve is hard to open, discontinue use and contact your supplier.

For additional information on storage and handling, refer to Compressed Gas Association (CGA) pamphlet P-1, *Safe Handling of Compressed Gases in Containers*, available from the CGA. Refer to Section 16 for the address and phone number along with a list of other available publications.

OTHER HAZARDOUS CONDITIONS OF HANDLING, STORAGE, AND USE:

High pressure gas. Use piping and equipment adequately designed to withstand pressures to be encountered. **Gas can cause rapid suffocation due to oxygen deficiency.** Store and use with adequate ventilation. Close valve after each use; keep closed even when empty. **Prevent reverse flow.** Reverse flow into cylinder may cause rupture. Use a check valve or other protective device in any line or piping from the cylinder. **Never work on a pressurized system.** If there is a leak, close the cylinder valve. Blow the system down in an environmentally safe manner in compliance with all federal, provincial, and local laws, then repair the leak. **Never place a compressed gas cylinder where it may become part of an electrical circuit.**

8. Exposure Controls/Personal Protection**VENTILATION/ENGINEERING CONTROLS:**

LOCAL EXHAUST: Preferred.

MECHANICAL (general): Acceptable.

SPECIAL: Not applicable.

OTHER: Not applicable.

PERSONAL PROTECTION:

RESPIRATORY PROTECTION: Wear appropriate respirator when ventilation is inadequate.

Select in accordance with provincial regulations, local bylaws or guidelines. Selection should also be based on the current CSA standard Z94.4, "Selection, Care and Use of Respirators". Respirators should also be approved by NIOSH and MSHA.

SKIN PROTECTION: Insulated Neoprene.

EYE PROTECTION: Wear safety glasses when handling cylinders.

Select in accordance with the current CSA standard Z94.3, "Industrial Eye and Face Protection", and any provincial regulations, local bylaws or guidelines.

OTHER PROTECTIVE EQUIPMENT: Metatarsal shoes for cylinder handling. Protective clothing where needed. Cuffless trousers should be worn outside the shoes. Select in accordance with the current CSA standard Z195, "Protective Foot Wear", and any provincial regulations, local bylaws or guidelines.

9. Physical and Chemical Properties

PHYSICAL STATE: Gas.	FREEZING POINT: Not available.	pH: Not available.
BOILING POINT: Not available.	VAPOUR PRESSURE: Not applicable.	MOLECULAR WEIGHT: Not applicable.
SPECIFIC GRAVITY: LIQUID (Water = 1): Not available.	SOLUBILITY IN WATER: Not available.	
SPECIFIC GRAVITY: VAPOUR (air = 1): Not available.	EVAPORATION RATE (Butyl Acetate=1): Not available.	COEFFICIENT OF WATER/OIL DISTRIBUTION: Not applicable.
VAPOUR DENSITY: Not available.	% VOLATILES BY VOLUME: Not available.	ODOUR THRESHOLD: Not available.
APPEARANCE & ODOUR: Colourless. Odourless.		

10. Stability and Reactivity

STABILITY:	The product is stable.
CONDITIONS OF CHEMICAL INSTABILITY:	See Section VII.
INCOMPATIBILITY (materials to avoid):	Alkali metals, alkline earth metals, metal acetylides, chromium, titanium above 550 C, uranium above 750 C.
HAZARDOUS DECOMPOSITION PRODUCTS:	In the presence of an electrical discharge, carbon dioxide is decomposed to form carbon monoxide and oxygen.
HAZARDOUS POLYMERIZATION:	Will not occur.
CONDITIONS OF REACTIVITY:	None currently known.

11. Toxicological Information

See section 3.

Carbon dioxide is an asphyxiant. It initially stimulates respiration and then causes respiratory depression. High concentrations result in narcosis. Symptoms in humans are as follows:

EFFECTS:

Breathing rate increases slightly.

CO₂

CONCENTRATION:

1%

Breathing rate increases to 50% above normal level. Prolonged exposure can cause headache, tiredness.

2%

Breathing increases to twice normal rate and become labored. Weak narcotic effect. Impaired hearing, headache, increased blood pressure and pulse rate.

3%

Breathing increases to approximately four times normal rate, symptoms of intoxication become evident, and slight choking may be felt.

4 - 5%

Characteristic sharp odor noticeable. Very labored breathing, headache, visual impairment, and ringing in the ears. Judgment may be impaired, followed within minutes by loss of consciousness.

5 - 10%

50 - 100%

Unconsciousness occurs more rapidly above 10% level. Prolonged exposure to high concentrations may eventually result in death from asphyxiation.

12. Ecological Information

No adverse ecological effects expected. This product does not contain any Class I or Class II ozone-depleting chemicals. The components of this mixture are not listed as marine pollutants by TDG Regulations.

13. Disposal Considerations

WASTE DISPOSAL METHOD:

Do not attempt to dispose of residual or unused quantities. Return cylinder to supplier.

14. Transport Information

TDG/IMO SHIPPING NAME:

Compressed gas, n.o.s. (carbon dioxide)

HAZARD CLASS: CLASS 2.2 Non-flammable, non-corrosive and non-toxic gas

IDENTIFICATION #:

UN1956

PRODUCT REPORTABLE QUANTITY (PRQ):
Any accidental release in a quantity that could pose a danger to public safety or any sustained release of 10 minutes or more

SHIPPING LABEL(s):

Non-flammable, non-corrosive and non-toxic gas

PLACARD (when required):

Non-flammable, non-corrosive and non-toxic gas

SPECIAL SHIPPING INFORMATION:

Cylinders should be transported in a secure position, in a well-ventilated vehicle. Cylinders transported in an enclosed, non-ventilated compartment of a vehicle can present serious safety hazards.

15. Regulatory Information

The following selected regulatory requirements may apply to this product. Not all such requirements are identified. Users of this product are solely responsible for compliance with all applicable federal, provincial, and local regulations.

DSL (Canada) This product is on the DSL list

WHMIS (Canada) CLASS A: Compressed gas.

International Regulations

EINECS Not available.

DSCL (EEC) This product is not classified according to the EU regulations.

International Lists No products were found.

16. Other Information

MIXTURES:

When two or more gases, or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist, or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

HAZARD RATING SYSTEM:

HMIS RATINGS:

HEALTH 0

FLAMMABILITY 0

PHYSICAL HAZARD 2

STANDARD VALVE CONNECTIONS FOR U.S. AND CANADA:

THREADED: CGA-580

PIN-INDEXED YOKE: Not available.

ULTRA-HIGH-INTEGRITY CONNECTION: Not available.

Use the proper CGA connections. **DO NOT USE ADAPTERS.** Additional limited-standard connections may apply. See CGA pamphlets V-1 and V-7 listed below.

Ask your supplier about free Praxair safety literature as referred to in this MSDS and on the label for this product. Further information about this product can be found in the following pamphlets published by the Compressed Gas Association, Inc. (CGA), 4221 Walney Road, 5th Floor, Chantilly, VA 20151-2923, Telephone (703) 788-2700, Fax (703) 961-1831, website: www.cganet.com.

- AV-1 Safe Handling and Storage of Compressed Gas
- P-1 Safe Handling of Compressed Gases in Containers
- P-14 Accident Prevention in Oxygen-Rich, Oxygen-Deficient Atmospheres
- SB-2 Oxygen-Deficient Atmospheres
- V-1 Compressed Gas Cylinder Valve Inlet and Outlet Connections
- V-7 Standard Method of Determining Cylinder Valve Outlet Connections for Industrial Gas Mixtures
- Handbook of Compressed Gases, Fifth Edition

For more indepth information for each component, refer to the pure product MSDS.

The information contained in this MSDS is generated from technical sources using the Chemmate Mixture MSDS system and the pure-product MSDS for each component. These mixtures are not tested as a whole for chemical, physical, or health effects.

Product Name: Stargon SS

MSDS# E-6212-E

Date: Oct. 15, 2013

PREPARATION INFORMATION:

DATE: October 15, 2013
DEPARTMENT: Safety and Environmental Services
TELEPHONE: 905-803-1600

The opinions expressed herein are those of qualified experts within Praxair Canada Inc. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and the conditions of use of the product are not within the control of Praxair Canada Inc., it is the user's obligation to determine the conditions of safe use of the product.

Praxair Canada Inc. requests the users of this product to study this Material Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product, a user should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

Praxair and the *Flowing Airstream* design are trademarks of
Praxair Canada Inc.

Other trademarks used herein are trademarks or registered trademarks of their respective owners.



Praxair Canada Inc.
1 City Centre Drive
Suite 1200
Mississauga, ON L5B 1M2

Copyright © 2004, Praxair Canada Inc.

Page 7 of 7

Material Safety Data Sheet**TRAXON™ E SYNTHETIC CD-50**

000003000863



Version 2.0

Revision Date 2015/02/17

Print Date 2015/02/17

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : TRAXON™ E SYNTHETIC CD-50

Product code : TRE5P20, TRE5K60, TRE5DRM, TRE5, TRE5DCT

Manufacturer or supplier's details

Petro-Canada Lubricants Inc.
2310 Lakeshore Road West
Mississauga ON L5J 1K2
Canada

Emergency telephone number : Suncor Energy: +1 403-296-3000;
Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : A manual transmission fluid meeting API MT-1 for heavy duty applications. May be used where SAE 50 engine oil is recommended.

Prepared by : Product Safety: +1 905-804-4752

SECTION 2. HAZARDS IDENTIFICATION**Emergency Overview**

Appearance	viscous liquid
Colour	amber
Odour	Mild petroleum oil like.

Potential Health Effects

Primary Routes of Entry : Eye contact
Ingestion
Inhalation
Skin contact

Aggravated Medical Condition : None known.

Carcinogenicity:

IARC No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential

Material Safety Data Sheet

TRAXON™ E SYNTHETIC CD-50

000003000863

Version 2.0

Revision Date 2015/02/17

Print Date 2015/02/17



carcinogen by ACGIH.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

No hazardous ingredients

SECTION 4. FIRST AID MEASURES

- If inhaled : Move to fresh air.
Artificial respiration and/or oxygen may be necessary.
Seek medical advice.
- In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash skin thoroughly with soap and water or use recognized skin cleanser.
Wash clothing before reuse.
Seek medical advice.
- In case of eye contact : Remove contact lenses.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Obtain medical attention.
- If swallowed : Rinse mouth with water.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Never give anything by mouth to an unconscious person.
Seek medical advice.
- Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : No information available.
- Specific hazards during firefighting : Cool closed containers exposed to fire with water spray.

Material Safety Data Sheet

TRAXON™ E SYNTHETIC CD-50

000003000863



Version 2.0

Revision Date 2015/02/17

Print Date 2015/02/17

- Hazardous combustion products : Carbon oxides (CO, CO₂), nitrogen oxides (NO_x), sulphur oxides (SO_x), phosphorus oxides (PO_x), smoke and irritating vapours as products of incomplete combustion.
- Further information : Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Material can create slippery conditions.
- Environmental precautions : Do not allow uncontrolled discharge of product into the environment.
- Methods and materials for containment and cleaning up : Prevent further leakage or spillage if safe to do so.
Remove all sources of ignition.
Soak up with inert absorbent material.
Non-sparking tools should be used.
Ensure adequate ventilation.
Contact the proper local authorities.

SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Use only with adequate ventilation.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid contact with skin, eyes and clothing.
Do not ingest.
Keep away from heat and sources of ignition.
Keep container closed when not in use.
- Conditions for safe storage : Store in original container.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep in a dry, cool and well-ventilated place.
Keep in properly labelled containers.
To maintain product quality, do not store in heat or direct sunlight.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

- Engineering measures : No special ventilation requirements. Good general ventilation

Material Safety Data Sheet

TRAXON™ E SYNTHETIC CD-50

000003000863

Version 2.0

Revision Date 2015/02/17

Print Date 2015/02/17



should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

- Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
- Filter type : organic vapour filter
- Hand protection
Material : neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R).
- Remarks : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- Eye protection : Wear face-shield and protective suit for abnormal processing problems.
- Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
- Protective measures : Wash contaminated clothing before re-use.
No special protective equipment required.
- Hygiene measures : Remove and wash contaminated clothing and gloves, including the inside, before re-use.
Wash face, hands and any exposed skin thoroughly after handling.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : viscous liquid
- Colour : amber
- Odour : Mild petroleum oil like.
- Odour Threshold : No data available
- pH : No data available
- Pour point : -45 °C (-49 °F) No data available
- Boiling point/boiling range : No data available
- Flash point : 221 °C (430 °F)
Method: Cleveland open cup
- Fire Point : No data available

Material Safety Data Sheet

TRAXON™ E SYNTHETIC CD-50

000003000863



Version 2.0

Revision Date 2015/02/17

Print Date 2015/02/17

Auto-Ignition Temperature	: No data available
Evaporation rate	: No data available
Flammability	: Low fire hazard. This material must be heated before ignition will occur.
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available
Density	: 0.86 kg/l (15 °C / 59 °F)
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: 132.0 cSt (40 °C / 104 °F)
	17.5 cSt (100 °C / 212 °F)
Explosive properties	: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	: No data available
Incompatible materials	: Reactive with oxidising agents, acids and alkalis.
Hazardous decomposition products	: May release COx, NOx, SOx, POx, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	: Eye contact Ingestion Inhalation Skin contact
--	--

Acute toxicity

Product:

Material Safety Data Sheet

TRAXON™ E SYNTHETIC CD-50

000003000863



Version 2.0

Revision Date 2015/02/17

Print Date 2015/02/17

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

Skin corrosion/irritation

Product:

Remarks: No data available

Serious eye damage/eye irritation

Product:

Remarks: No data available

Respiratory or skin sensitisation

No data available

Germ cell mutagenicity

No data available

Carcinogenicity

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Aspiration toxicity

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae : Remarks: No data available

Toxicity to bacteria : Remarks: No data available

Material Safety Data Sheet

TRAXON™ E SYNTHETIC CD-50

000003000863



Version 2.0

Revision Date 2015/02/17

Print Date 2015/02/17

Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.
Offer surplus and non-recyclable solutions to a licensed disposal company.
Waste must be classified and labelled prior to recycling or disposal.
Send to a licensed waste management company.
Dispose of as hazardous waste in compliance with local and national regulations.
Dispose of product residue in accordance with the instructions of the person responsible for waste disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulation

IATA-DGR

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

49 CFR

Not regulated as a dangerous good

TDG

Not regulated as a dangerous good

Special precautions for user

Not applicable

Material Safety Data Sheet

TRAXON™ E SYNTHETIC CD-50

000003000863



Version 2.0

Revision Date 2015/02/17

Print Date 2015/02/17

SECTION 15. REGULATORY INFORMATION

WHMIS Classification : Not Rated

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

The components of this product are reported in the following inventories:

DSL	On the inventory, or in compliance with the inventory
TSCA	All chemical substances in this product are either listed on the TSCA Inventory or are in compliance with a TSCA Inventory exemption.
EINECS	On the inventory, or in compliance with the inventory
IECSC	On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

MATERIAL SAFETY DATA SHEET**SECTION 1 — PRODUCT IDENTIFICATION**

Product identifier: 0357- Swish Toilet Bowl Cleaner
Product use: Toilet Bowl & Urinal cleaner.
Product Code Number: 63315, 63316
MSDS Number: 0357

WHMIS Classification: D1A, E

Supplier name and address:
 Swish Maintenance Limited
 2060 Fisher Dr.
 Peterborough, ON K9J 8N4
 (705) 740-2880

Manufacturer's name and address:
 Refer to Supplier

Emergency Telephone #: CANUTEC (613) 996-6666

SECTION 2 — CHEMICAL COMPOSITION/HAZARDOUS INGREDIENTS

<u>Ingredients</u>	<u>CAS #</u>	<u>% (weight)</u>	<u>LD₅₀</u>	<u>LD₅₀</u>	<u>LC₅₀</u>
			<u>mg/kg</u> <u>oral/rabbit</u>	<u>mg/kg</u> <u>skin/rabbit</u>	<u>ppm</u> <u>inh/mouse</u>
Hydrogen chloride	7647-01-0	15-40	900	n/av	1108 ppm/1H
Ethoxylated alcohol	68131-39-5	0.1-1	3200	n/av	n/av

SECTION 3 — HAZARDS IDENTIFICATION*****POTENTIAL HEALTH EFFECTS*****

Routes of entry: Inhalation, ingestion, skin and eye contact.

Emergency Overview: Danger! Extremely corrosive! Causes severe burns and eye damage.

Signs and symptoms of short-term (acute) exposure:

Inhalation: Extremely irritating and/or corrosive to the eyes, nose, throat and lungs. Harmful if inhaled.

Skin contact: Dangerous in case of skin contact. Causes tissue damage.

Eye contact: Contact can result in corneal damage or blindness. Immediate pain, severe burns.

Ingestion: Harmful or fatal if swallowed. May burn mouth, throat and stomach.

Effects of long-term (chronic) exposure: See Section 11. **Other important hazards:** None reported.

SECTION 4 — FIRST AID MEASURES

Inhalation: Remove victim to fresh air. If symptoms persist, call a physician.

Skin contact: Flush skin with plenty of water, for at least 15 minutes, while removing contaminated clothing. Call physician immediately. Wash contaminated clothing before reuse. Obtain medical attention.

Eye contact: IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Consult a doctor immediately.

Ingestion: Immediately call physician. DO NOT induce vomiting. Give several glasses of water. Never give anything by mouth if victim is unconscious or convulsing.

SECTION 5 — FIRE FIGHTING MEASURES

Fire hazards/conditions of flammability: Not flammable.

Flash point (Method): Not applicable. °C (°F)

Lower flammable limit (% by volume): n/ap

Upper flammable limit (% by volume): n/ap

Explosion data: *Sensitivity to mechanical impact:* Not sensitive. *Sensitivity to static discharge:* Not sensitive.

Oxidizing properties: None.

Auto-ignition temperature: None.

Suitable extinguishing media: As appropriate for burning of surrounding products.

Special fire-fighting procedures/equipment: n/ap

Hazardous combustion products: n/ap

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal precautions: Wear adequate personal protective equipment.

Environmental precautions: No special precautions required.

Spill response/Cleanup: Recover and reuse as much of the product as possible. Restrict access to area until completion of clean up. Ensure trained personnel conduct clean up. Do not touch spilled material.

Prohibited materials: None known.

SECTION 7 — HANDLING AND STORAGE

Safe handling procedures: Product is corrosive. Avoid contact with skin, eyes and clothing. Wear proper protective equipment, including rubber gloves.

Storage requirements: Store in a cool, dry area. Keep away from incompatible materials, (see Sect. 10)

Special packaging materials: Plastic or other corrosion resistant containers.

SECTION 8 — EXPOSURE CONTROLS AND PERSONAL PROTECTION

Ventilation and engineering controls: Mechanic ventilation should be adequate.

Respiratory protection: Normally a respirator is required.

Protective gloves: Butyl rubber, Neoprene, Viton. Not recommended – Polyvinyl alcohol.

Eye protection: Safety glasses, or chemical goggles.

Other protective equipment: As required by workplace standards.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Physical form, color and odor: Opaque white emulsion with pungent odour

Odor threshold: n/av

pH: <1

Boiling point: n/av

Melting/freezing point: n/av

Vapour pressure: n/av

Solubility in water: Very soluble.

Coefficient of oil/water distribution: Essentially zero.

Specific gravity or relative density (water = 1): 1.10-1.16

Vapour density: n/av

Volatile organic compounds (VOC's): n/ap

Evaporation rate: n/ap **Percent Volatile by Weight:** n/av **%HCl = 22.5-24%**

SECTION 10 — REACTIVITY AND STABILITY DATA

Stability and reactivity: Normally stable.

Conditions to avoid: Unintentional contact with water and moisture. Keep containers tightly closed, when not in use.

Materials to avoid: Strong bases, reactive metals. When diluting DO NOT add water to the acid. Add acid to water.

Hazardous decomposition products: Toxic chlorine fumes.

SECTION 11 — TOXICOLOGICAL INFORMATION

LD₅₀: Not established for this product. See Section 2 for values for ingredients.

LC₅₀: Not established for this product. See Section 2 for values for ingredients.

Exposure limits: ACGIH-TLV 5 ppm (Ceiling)

Carcinogenicity: None of the ingredients is listed by IARC, ACGIH, NTP, and OSHA as carcinogen.

Teratogenicity, mutagenicity, other reproductive effects: There is no human or animal information available on teratogenicity, reproductive toxicity, or mutagenicity.

Sensitization to material: Not reported.

Conditions aggravated by exposure: Skin conditions.

Synergistic materials: None known.

SECTION 12 — ECOLOGICAL INFORMATION

Environmental effects: Product is corrosive. Low pH (acidity) of material is harmful to aquatic life.

SECTION 13 — WASTE DISPOSAL

Handling for disposal: Reuse if possible.

Methods of disposal: Follow local, provincial, state and federal regulations.

SECTION 14 — TRANSPORTATION INFORMATION

Shipping description: TDG – Hydrochloric acid, Class 8, UN1789 P.G. II, Placard –8-Corrosive

Please note: This shipping description is of a general nature only. It does not consider package sizes, modes of transport and other specific circumstances. Appropriate regulations should be referenced, and handling for transportation of dangerous goods/hazardous materials should be performed by trained personnel only.

SECTION 15 — REGULATORY INFORMATION

WHMIS information: D1A, E

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and this MSDS contains all the information required by the CPR.

SECTION 16 — OTHER INFORMATION

Prepared by: Armstrong Manufacturing Inc.

Telephone number: (905) 566-1395

Preparation date: January 24, 2013

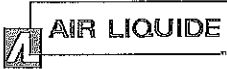
References:

1. ACGIH, Threshold Limit Values and Biological Exposure Indices for 2002.
2. International Agency for Research on Cancer Monographs, Supplement 7, 1988.
3. Canadian Centre for Occupational Health and Safety. CHEMINFO database.
4. Material Safety Data Sheets from raw materials suppliers.
5. N. Irving Sax. Dangerous Properties of Industrial Materials, Seventh Edition.

n/ap Not applicable

n/av Not available

MV/mt



Material Safety Data Sheet - MSDS

Section 1. Chemical Product and Company Identification

ALM WIRE

Product name Blueshield	Classification CSA: ER4043; ER5356; ER4047;	Classification AWS: ER4043; ER5356; ER4047;	
Description	: Aluminium Wire for GMAW (MIG).	Generic Code	: AL-J-012-0
In case of emergency	: 1-514-878-1667	Date of issue	: 01/13/2014
Supplier	: Air Liquide Canada Inc., 1250, René-Lévesque Ouest, Suite 1700, Montréal, QC H3B 5E6		

Section 2. Hazards Identification

Physical state and Appearance : Solid.

Emergency overview : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.

WARNING!

ELECTRIC SHOCK can kill.

FUMES AND GASES can be dangerous to your health.

ARC RAYS can injure eyes and burn skin.

MAY BE HARMFUL IF INHALED. MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

Use only with adequate ventilation. Do not eat, drink or smoke when using this product. Avoid contact with eyes, skin and clothing. Keep container tightly closed. Wash thoroughly after handling.

Routes of entry : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

Eyes : Hazardous by the following route of exposure: of eye contact (irritant). Inflammation of the eye is characterized by redness, watering and itching.

Skin : Hazardous by the following route of exposure: of skin contact (corrosive). Skin contact may produce burns.

Inhalation : Hazardous by the following route of exposure: of inhalation.

Ingestion : Since the product (welding fumes) is a gas and that it is mostly probable that it will be inhaled more than ingested, please consider first to look at the preventive measures in case of inhalation.

Potential chronic health effects :

Carcinogenicity

Not available.

Mutagenic effects Not available.

Teratogenic effects: Not available.

Medical conditions aggravated by over-exposure : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

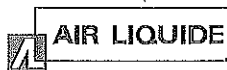
(*) See Abbreviations (section 16).

Section 3. Composition, Information on Ingredients

Name	CAS #	% by weight	UN number
Aluminium	7429-90-5	87 - 98	UN1396
Silicon	7440-21-3	4 - 13	UN1346
Copper	7440-50-8	0.1 - 6	UN3077
magnesium	7439-95-4	0.1 - 5	Not available.
Manganese	7439-96-5	<1.5	Not available.
Chromium	7440-47-3	<0.5	Not available.

The fumes emitted by the electrodes, in use, are hazardous. This MSDS is written for workers using these electrodes.

See Section 8 for Exposure Limits of the oxides found in the welding fumes.



Section 4. First Aid Measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Section 5. Fire Fighting Measures

- Flammability of the product** : Non-flammable. Emits toxic fumes when heated.
- Explosibility** : Non-explosive in the presence of the following materials or conditions: open flames, sparks and static discharge, heat and shocks and mechanical impacts.
- Fire-fighting media and instructions** : Use an extinguishing agent suitable for the surrounding fire.

Section 6. Accidental Release Measures

- Small/Large Spill and Leak** : Use appropriate tools to transfer the spilled solid to a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Section 7. Handling and Storage

- Handling** : Avoid contact with eyes. Avoid breathing dust. Do not get on skin or clothing. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Avoid contact of spilled material and runoff with soil and surface waterways.
- Storage** : All filler metals in their original, unopened containers should be kept in a relatively dry storage area at temperatures between 15°C (60°F) and 30°C (80°F) and 50% maximum relative humidity.

Section 8. Exposure Controls, Personal Protection

- Engineering controls** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

- Eyes** : Safety glasses with side shields. Face shield with radiation shielding.
- Body** : Full suit. Fire resistant.
- Respiratory** : Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear a canister breathing apparatus (respirator) or a supplied-air respirator, when required, to weld in a confined space or when room exhaust or ventilation does not keep exposure below the acceptable values.
- Hands** : Gloves. Fire resistant.
- Feet** : Metal cap, safety boots.

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			Notations
Ingredient	List name	ppm	mg/m ³	Other	ppm	mg/m ³	Other	ppm	mg/m ³	Other	
Aluminium	US ACGIH 6/2013	-	1	-	-	-	-	-	-	-	[a]
	AB 4/2009	-	10	-	-	-	-	-	-	-	[3] [b]
	BC 7/2013	-	1	-	-	-	-	-	-	-	[c]
	ON 1/2013	-	1	-	-	-	-	-	-	-	[a]
Aluminium, as Al Silicon	QC 12/2012	-	10	-	-	-	-	-	-	-	[d]
	BC 7/2013	-	3	-	-	-	-	-	-	-	[e]
	BC 7/2013	-	10	-	-	-	-	-	-	-	[e]
	ON 1/2013	-	10	-	-	-	-	-	-	-	[e]
Copper, as Cu	QC 12/2012	-	10	-	-	-	-	-	-	-	[f]
	US ACGIH 6/2013	-	1	-	-	-	-	-	-	-	[g]
	US ACGIH 6/2013	-	0.2	-	-	-	-	-	-	-	[h]
	AB 4/2009	-	1	-	-	-	-	-	-	-	[i]
	BC 7/2013	-	0.2	-	-	-	-	-	-	-	[h]
Copper	ON 1/2013	-	1	-	-	-	-	-	-	-	[j]
	ON 1/2013	-	0.2	-	-	-	-	-	-	-	[h]
Copper, as Cu	ON 1/2013	-	1	-	-	-	-	-	-	-	[k]
	QC 12/2012	-	1	-	-	-	-	-	-	-	[l]
Manganese, as Mn	QC 12/2012	-	0.2	-	-	-	-	-	-	-	[m]
	US ACGIH 6/2013	-	0.1	-	-	-	-	-	-	-	[n]
	US ACGIH 6/2013	-	0.2	-	-	-	-	-	-	-	[a]
	AB 4/2009	-	0.2	-	-	-	-	-	-	-	
	BC 7/2013	-	0.2	-	-	-	-	-	-	-	
	ON 1/2013	-	0.2	-	-	-	-	-	-	-	
Chromium, measured as Cr Chromium, as Cr	QC 12/2012	-	1	-	-	3	-	-	-	-	[m]
	US ACGIH 6/2013	-	0.5	-	-	-	-	-	-	-	[o]
	AB 4/2009	-	0.5	-	-	-	-	-	-	-	[3]

Section 13. Disposal Considerations

Waste information : Waste must be disposed of in accordance with federal, state and local environmental control regulations. Recycle, if possible.
Consult your local or regional authorities.

Section 14. Transport Information

No transport class is found applicable to this product.

Section 15. Regulatory Information

HCS Classification : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Target organ effects

U.S. Federal regulations : TSCA 8(a) CDR Exempt/Partial exemption: Not determined
United States inventory (TSCA 8b): All components are listed or exempted.
SARA 302/304: No products were found.
SARA 311/312 Hazards identification: Delayed (chronic) health hazard
Clean Water Act (CWA) 307: Copper; Chromium

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Aluminium	7429-90-5	87 - 98
	Copper	7440-50-8	0.1 - 6
	Manganese	7439-96-5	<1.5
Supplier notification	Aluminium	7429-90-5	87 - 98
	Copper	7440-50-8	0.1 - 6
	Manganese	7439-96-5	<1.5

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations :

- Massachusetts : The following components are listed: ALUMINUM; SILICON DUST; MAGNESIUM; COPPER; MANGANESE
- New York : The following components are listed: Copper
- New Jersey : The following components are listed: ALUMINUM; SILICON; MAGNESIUM; COPPER; MANGANESE
- Pennsylvania : The following components are listed: ALUMINUM; SILICON; MAGNESIUM; COPPER FUME; MANGANESE

None of the components are listed.

WHMIS (Canada) : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Class D-2B: Material causing other toxic effects (Toxic).
CEPA Toxic substances: None of the components are listed.
Canadian ARET: None of the components are listed.
Canadian NPRI: The following components are listed: Aluminum (fume or dust only); Copper (and its compounds); Manganese (and its compounds)
Alberta Designated Substances: None of the components are listed.
Ontario Designated Substances: None of the components are listed.
Quebec Designated Substances: None of the components are listed.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Section 16. Other Information

Label requirements : See Section 2.

Hazardous Material Information System (U.S.A.) : Health: 2* Fire: 0 Reactivity: 0

National Fire Protection Association (U.S.A.) : Health: 2 Fire: 0 Reactivity: 0 Other: None

References : - 29CFR Part 1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. - CRC Handbook of chemistry and physics, 67th edition. CRC Press inc., Boca Raton, Florida. - Manufacturer's Material Safety Data Sheet. ANSI Z400.1, MSDS Standard, 2004. ANSI Z49.1 Safety in Welding and Cutting, The American Welding Society, P.O. Box 351040, Miami, FL 33135. Canadian Standard Association, CSA W117.2, Code for Safety in Welding and Cutting, 2003.

Abbreviations and acronyms :

- ACGIH: American Conference of Governmental Industrial Hygiene.
- ACGIH-A1-Confirmed Human Carcinogen.
- ACGIH-A2-Suspected Human Carcinogen.
- ACGIH-A3-Animal Carcinogen.
- ACGIH-A4-Not Classifiable as a Human Carcinogen.
- ACGIH-A5-Not suspected as a Human Carcinogen.
- IARC: International Agency for Research on Cancer.
- IARC 1: Proven.
- IARC 2A: Probable for human.

IARC 2B: Possible for human.
IARC 3: Not classifiable for human.
NIOSH: National Institute of Occupational Safety and Health.
NIOSH +: Proven.
NIOSH: None.
EU: European Union
Carc. 1A : May cause cancer (Known)
Carc. 1B : May cause cancer (Presumed)
Carc. 2 : Suspected of causing cancer
NTP: National Toxicology program.
NTP 1: Known to be human carcinogens.
NTP 2: Reasonably Anticipated to be human carcinogens.

Responsible name : IHS
Date of previous issue : 01/15/2011
Version : 5

Notice to reader

THE INFORMATION, RECOMMENDATIONS AND DATA CONTAINED IN THIS DOCUMENT ARE INTENDED TO BE USED BY PROPERLY TRAINED AND QUALIFIED PERSONNEL ONLY AND AT THEIR SOLE RISKS AND DISCRETION. THE INFORMATION, RECOMMENDATIONS AND DATA HEREIN CONTAINED ARE DERIVED FROM SOURCES WHICH WE BELIEVE TO BE RELIABLE. HOWEVER, AIR LIQUIDE CANADA INC. MAKES NO REPRESENTATION AND GIVES NO WARRANTY OF ANY KIND WHATSOEVER WITH RESPECT TO THEIR ACCURACY OR COMPLETENESS AND ASSUMES NO LIABILITY FOR DAMAGES OR LOSS ARISING DIRECTLY OR INDIRECTLY FROM THEIR USE, WHETHER PROPER OR IMPROPER.



Material Safety Data Sheet - MSDS

Section 1. Chemical Product and Company Identification

STL WIRE

Product name Blueshield	Classification CSA:	Classification AWS:	
LA C-3M; LA C-6; LA C-6 LF; LA C-6 CT; LA C-6 CR; LA C-6 LS; SAFDUAL; SAFDUAL 200;	- E491C-6-H4 / E491C-6M-H4; E491C-6-H4 / E491C-6M-H4 E491C-6-H4 / E491C-6M-H4 E491C-6-H4 / E491C-6M-H4 E492C-6-H4 / E492C-6M-H4	E70C-3M-H8; E70C-6M-H4; E70C-6M-H4; E70C-6M-H4; E70C-6M-H4; E70C-6M-H4; E70C-G-H4;	
Description	: MCAW - Carbon Steel Metal-Cored Wires.	Generic Code	: AL-T-002-0
In case of emergency	: 1-514-878-1667	Date of issue	: 01/13/2014
Supplier	: Air Liquide Canada Inc., 1250, René-Lévesque Ouest, Suite 1700, Montréal, QC H3B 5E6		

Section 2. Hazards Identification

Physical state and Appearance : Solid.

Emergency overview : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.

WARNING!

ELECTRIC SHOCK can kill.

FUMES AND GASES can be dangerous to your health.

ARC RAYS can injure eyes and burn skin.

MAY BE HARMFUL IF INHALED. CAUSES RESPIRATORY TRACT IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA. SUSPECT CANCER HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE CANCER.

Do not handle until all safety precautions have been read and understood. Obtain special instructions before use. Use only with adequate ventilation. Do not eat, drink or smoke when using this product. Avoid contact with eyes, skin and clothing. Keep container tightly closed. Use personal protective equipment as required. Wash thoroughly after handling.

Routes of entry : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

Eyes : Hazardous by the following route of exposure: of eye contact (irritant). Inflammation of the eye is characterized by redness, watering and itching.

Skin : Hazardous by the following route of exposure: of skin contact (corrosive, sensitizer). Skin contact may produce burns.

Inhalation : Hazardous by the following route of exposure: of inhalation (lung irritant).

Ingestion : Since the product (welding fumes) is a gas and that it is mostly probable that it will be inhaled more than ingested, please consider first to look at the preventive measures in case of inhalation.

Potential chronic health effects :

Carcinogenicity

Product/ingredient name	ACGIH	OSHA	IARC	NTP	EU
nickel	A5	-	2B	Reasonably anticipated to be a human carcinogen.	Carc. 2, H351

Mutagenic effects Not available.

Teratogenic effects: Not available.

Medical conditions aggravated by over-exposure : Pre-existing skin disorders and disorders involving any other target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

(* See Abbreviations (section 16).

Section 3. Composition, Information on Ingredients

Name	CAS #	% by weight	UN number
Iron	7439-89-6	80 - 98	Not available.
Manganese	7439-96-5	1 - 4	Not available.
Nickel	7440-02-0	0.01 - 4	Not available.
Chromium	7440-47-3	0.01 - 3	Not available.
Silicon	7440-21-3	0.01 - 3	UN1346
Molybdenum	7439-98-7	0.01 - 2	Not regulated.

The fumes emitted by the electrodes, in use, are hazardous. This MSDS is written for workers using these electrodes.

See Section 8 for Exposure Limits of the oxides found in the welding fumes.

Section 4. First Aid Measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Section 5. Fire Fighting Measures

- Flammability of the product** : Non-flammable. Emits toxic fumes when heated.
- Explosibility** : Non-explosive in the presence of the following materials or conditions: open flames, sparks and static discharge, heat and shocks and mechanical impacts.
- Fire-fighting media and instructions** : Use an extinguishing agent suitable for the surrounding fire.

Section 6. Accidental Release Measures

- Small/Large Spill and Leak** : Use appropriate tools to transfer the spilled solid to a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Section 7. Handling and Storage

- Handling** : Avoid contact with eyes. Avoid breathing dust. Avoid prolonged or repeated contact with skin. Do not get on skin or clothing. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Avoid contact of spilled material and runoff with soil and surface waterways.
- Storage** : All filler metals in their original, unopened containers should be kept in a relatively dry storage area at temperatures between 15°C (60°F) and 30°C (80°F) and 50% maximum relative humidity.

Section 8. Exposure Controls, Personal Protection

- Engineering controls** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

- Eyes** : Safety glasses with side shields. Face shield with radiation shielding.
- Body** : Full suit. Fire resistant.
- Respiratory** : Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear a canister breathing apparatus (respirator) or a supplied-air respirator, when required, to weld in a confined space or when room exhaust or ventilation does not keep exposure below the acceptable values.
- Hands** : Gloves. Fire resistant.
- Feet** : Metal cap, safety boots.

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			Notations
Ingredient	List name	ppm	mg/m ³	Other	ppm	mg/m ³	Other	ppm	mg/m ³	Other	
Manganese, as Mn	US ACGIH 6/2013	-	0.1	-	-	-	-	-	-	-	[a]
	AB 4/2009	-	0.2	-	-	-	-	-	-	-	[b]
	BC 7/2013	-	0.2	-	-	-	-	-	-	-	
	ON 1/2013	-	0.2	-	-	-	-	-	-	-	
	QC 12/2012	-	1	-	-	3	-	-	-	-	[c]
Nickel	US ACGIH 6/2013	-	1.5	-	-	-	-	-	-	-	[a]
	AB 4/2009	-	1.5	-	-	-	-	-	-	-	
Nickel, as Ni	BC 7/2013	-	0.05	-	-	-	-	-	-	-	
	ON 1/2013	-	1	-	-	-	-	-	-	-	[d]
Nickel	QC 12/2012	-	1	-	-	-	-	-	-	-	
	US ACGIH 6/2013	-	0.5	-	-	-	-	-	-	-	[e]
Chromium, measured as Cr	AB 4/2009	-	0.5	-	-	-	-	-	-	-	[3]
Chromium, as Cr	BC 7/2013	-	0.5	-	-	-	-	-	-	-	
	ON 1/2013	-	0.5	-	-	-	-	-	-	-	[e]
Chromium, as Cr	QC 12/2012	-	0.5	-	-	-	-	-	-	-	
	BC 7/2013	-	3	-	-	-	-	-	-	-	[f]
Silicon	BC 7/2013	-	10	-	-	-	-	-	-	-	[g]
	ON 1/2013	-	10	-	-	-	-	-	-	-	[g]
Molybdenum, as Mo	QC 12/2012	-	10	-	-	-	-	-	-	-	[h]
	US ACGIH 6/2013	-	10	-	-	-	-	-	-	-	[a]
	US ACGIH 6/2013	-	3	-	-	-	-	-	-	-	[b]
	AB 4/2009	-	3	-	-	-	-	-	-	-	[i]
Molybdenum	ON 1/2013	-	10	-	-	-	-	-	-	-	
	BC 7/2013	-	10	-	-	-	-	-	-	-	[j]
	BC 7/2013	-	3	-	-	-	-	-	-	-	[i]

Molybdenum, as Mo	ON 1/2013	-	10	-	-	-	-	-	-	[a]
	ON 1/2013	-	3	-	-	-	-	-	-	[b]
Iron	US ACGIH	-	10	-	-	-	-	-	-	[k]

[3]Skin sensitization

Form: [a]Inhalable fraction [b]Respirable fraction [c]fume [d]Inhalable fraction: means that size fraction of the airborne particulate deposited anywhere in the respiratory tract and collected during air sampling with a particle size-selective device that, (a) meets the ACGIH particle size-selective sampling criteria for airborne particulate matter; and (b) has the cut point of 100 µm at 50 per cent collection efficiency. [e]Inorganic [f]Respirable dust [g]Total dust [h]Total dust. [i]Respirable [j]Inhalable [k]Inhalable particle.

Section 9. Physical and Chemical Properties

Physical state and Appearance	: Solid.
Color	: Bluish-grey.
Odor	: Odorless.
Melting/freezing point	: 1540°C (2804°F)
Specific gravity	: Weighted average: 7.54 [Water = 1]
Solubility	: Insoluble in the following materials: cold water and hot water.

Section 10. Stability and Reactivity

Stability and reactivity	: The product is stable.
Hazardous decomposition products	: Metallic oxides. carbon oxides (CO, CO ₂) Arc radiation can support the production of ozone and nitrogen oxides.
Hazardous polymerization	: Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological Information

Product/ingredient name	Result	Species	Dose	Exposure
Manganese	LD50 Oral	Rat	9 g/kg	-
Silicon	LD50 Oral	Rat	3160 mg/kg	-

Chronic effects and other toxic effects on humans : **CARCINOGENIC EFFECTS:** Classified A4 (Not classifiable for humans or animals.) by ACGIH [Manganese]. Classified + (Proven.) by NIOSH [Nickel]. Classified 2B (Possible for humans.) by IARC, 3 (Possible for humans.) by European Union [Nickel]. Classified 2 (Reasonably anticipated to be human carcinogens.) by NTP [Nickel]. Classified A5 (Not suspected for humans.) by ACGIH [Nickel]. Classified A4 (Not classifiable for humans or animals.) by ACGIH, 3 (Not classifiable for humans.) by IARC [Chromium].
Contains material which may cause damage to the following organs: blood, kidneys, lungs, the nervous system, liver, upper respiratory tract, skin, eyes, central nervous system (CNS), nose/sinuses.

Hazardous by the following route of exposure: of skin contact (corrosive, sensitizer), of eye contact (irritant), of inhalation (lung irritant).

Section 12. Ecological Information

Ecotoxicity data

Product/ingredient name	Result	Species	Exposure
Iron	Acute EC50 3700 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 33000 to 100000 µg/l Marine water	Crustaceans - Crangon crangon	48 hours
	Acute LC50 6.48 µg/l Marine water	Fish - Periophthalmus waltoni - Adult	96 hours
	Chronic NOEC 100 mg/l Marine water	Algae - Glenodinium halli	72 hours
Manganese	Acute EC50 31000 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 29000 µg/l	Daphnia - Daphnia magna	48 hours
	Acute LC50 28 mg/l Fresh water	Fish - Pimephales promelas	96 hours
	Acute EC50 2 ppm Marine water	Algae - Macrocystis pyrifera - Young	4 days
Nickel	Acute EC50 450 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute EC50 1000 µg/l Marine water	Daphnia - Daphnia magna	48 hours
	Acute IC50 0.31 mg/l Marine water	Crustaceans - Americamysis bahia - Juvenile (Fledgling, Hatchling, Weanling)	48 hours
	Acute LC50 47.5 ng/l Fresh water	Fish - Heteropneustes fossilis	96 hours
Chromium	Chronic NOEC 100 mg/l Marine water	Algae - Glenodinium halli	72 hours
	Chronic NOEC 3.5 µg/l Fresh water	Fish - Cyprinus carpio	4 weeks
	Acute EC50 0.2 ppm Marine water	Algae - Bacillariophyta	72 hours
	Acute EC50 5 ppm Marine water	Algae - Macrocystis pyrifera - Young	4 days
Molybdenum	Acute EC50 35000 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 45 µg/l Fresh water	Crustaceans - Ceriodaphnia reticulata	48 hours
	Acute LC50 22 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 13.9 ppm Fresh water	Fish - Anguilla rostrata	96 hours
Molybdenum	Chronic NOEC 50 mg/l Marine water	Algae - Glenodinium halli	72 hours
	Chronic NOEC 0.19 µg/l Fresh water	Fish - Cyprinus carpio	4 weeks
	Acute LC50 200000 µg/l	Daphnia - Daphnia magna	48 hours
	Acute LC50 800 mg/l Fresh water	Fish - Oncorhynchus mykiss	96 hours
Chronic NOEC 500 mg/l Marine water	Algae - Glenodinium halli	72 hours	

Products of degradation : Not applicable.

Section 13. Disposal Considerations

Waste information : Waste must be disposed of in accordance with federal, state and local environmental control regulations. Recycle, if possible.
Consult your local or regional authorities.

Section 14. Transport Information

No transport class is found applicable to this product.

Section 15. Regulatory Information

HCS Classification : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Irritating material
Sensitizing material
Carcinogen
Target organ effects

U.S. Federal regulations : TSCA 8(a) CDR Exempt/Partial exemption: Not determined
United States inventory (TSCA 8b): All components are listed or exempted.
SARA 302/304: No products were found.
SARA 311/312 Hazards identification: Immediate (acute) health hazard, Delayed (chronic) health hazard
Clean Water Act (CWA) 307: Nickel; Chromium; Copper

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Manganese	7439-96-5	1 - 4
	Nickel	7440-02-0	0.01 - 4
	Chromium	7440-47-3	0.01 - 3
Supplier notification	Manganese	7439-96-5	1 - 4
	Nickel	7440-02-0	0.01 - 4
	Chromium	7440-47-3	0.01 - 3

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations : Massachusetts : The following components are listed: MANGANESE; NICKEL; CHROMIUM; SILICON DUST; MOLYBDENUM
New York : The following components are listed: Nickel; Chromium
New Jersey : The following components are listed: MANGANESE; NICKEL; CHROMIUM; SILICON; MOLYBDENUM
Pennsylvania : The following components are listed: MANGANESE; NICKEL; CHROMIUM; SILICON; MOLYBDENUM

WARNING: This product contains a chemical known to the State of California to cause cancer.

WHMIS (Canada) : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).
CEPA Toxic substances: None of the components are listed.
Canadian ARET: None of the components are listed.
Canadian NPRI: The following components are listed: Manganese (and its compounds); Nickel (and its compounds); Chromium (and its compounds)
Alberta Designated Substances: None of the components are listed.
Ontario Designated Substances: None of the components are listed.
Quebec Designated Substances: None of the components are listed.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Section 16. Other Information

Label requirements : See Section 2.

Hazardous Material Information System (U.S.A.) : Health: 2* Fire: 0 Reactivity: 0

National Fire Protection Association (U.S.A.) : Health: 2 Fire: 0 Reactivity: 0 Other: None

References : - 29CFR Part 1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. - CRC Handbook of chemistry and physics, 67th edition. CRC Press Inc., Boca Raton, Florida. - Manufacturer's Material Safety Data Sheet. ANSI Z400.1, MSDS Standard, 2004. ANSI Z49.1 Safety in Welding and Cutting, The American Welding Society, P.O. Box 351040, Miami, FL 33135. Canadian Standard Association, CSA W117.2, Code for Safety in Welding and Cutting, 2003.

Abbreviations and acronyms : ACGIH: American Conference of Governmental Industrial Hygiene.
ACGIH-A1-Confirmed Human Carcinogen.
ACGIH-A2-Suspected Human Carcinogen.
ACGIH-A3-Animal Carcinogen.
ACGIH-A4-Not Classifiable as a Human Carcinogen.
ACGIH-A5-Not suspected as a Human Carcinogen.
IARC: International Agency for Research on Cancer.
IARC 1: Proven.
IARC 2A: Probable for human.
IARC 2B: Possible for human.
IARC 3: Not classifiable for human.
NIOSH: National Institute of Occupational Safety and Health.
NIOSH +: Proven.
NIOSH: None.
EU: European Union
Carc. 1A : May cause cancer (Known)
Carc. 1B : May cause cancer (Presumed)
Carc. 2 : Suspected of causing cancer
NTP: National Toxicology program.
NTP 1: Known to be human carcinogens.
NTP 2: Reasonably Anticipated to be human carcinogens.

Responsible name : IHS
Date of previous issue : 01/15/2011
Version : 5

Notice to reader

THE INFORMATION, RECOMMENDATIONS AND DATA CONTAINED IN THIS DOCUMENT ARE INTENDED TO BE USED BY PROPERLY TRAINED AND QUALIFIED PERSONNEL ONLY AND AT THEIR SOLE RISKS AND DISCRETION. THE INFORMATION, RECOMMENDATIONS AND DATA HEREIN CONTAINED ARE DERIVED FROM SOURCES WHICH WE BELIEVE TO BE RELIABLE. HOWEVER, AIR LIQUIDE CANADA INC. MAKES NO REPRESENTATION AND GIVES NO WARRANTY OF ANY KIND WHATSOEVER WITH RESPECT TO THEIR ACCURACY OR COMPLETENESS AND ASSUMES NO LIABILITY FOR DAMAGES OR LOSS ARISING DIRECTLY OR INDIRECTLY FROM THEIR USE, WHETHER PROPER OR IMPROPER.



Material Safety Data Sheet - MSDS

Section 1. Chemical Product and Company Identification

STL WIRE

Product name	Classification	Classification
Blueshield	CSA:	AWS:
LA S-3/LA HI TENSILE;	ER480S-3/ ER49S-3;	ER70S-3;
STRAIGHT WELD LA S-3;	ER480S-3/ ER49S-3;	ER70S-3;
LA S-6/LA 75G;	ER480S-6/ ER49S-6;	ER70S-6;
STRAIGHT WELD LA S-6;	ER480S-6/ ER49S-6;	ER70S-6;
Description	: GMAW - Carbon Steel Solid Wires.	Generic Code : AL-T-007-0
In case of emergency	: 1-514-878-1667	Date of issue : 01/13/2014
Supplier	: Air Liquide Canada Inc., 1250, René-Lévesque Ouest, Suite 1700, Montréal, QC H3B 5E6	

Section 2. Hazards Identification

Physical state and Appearance : Solid.

Emergency overview : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.

WARNING!

ELECTRIC SHOCK can kill.

FUMES AND GASES can be dangerous to your health.

ARC RAYS can injure eyes and burn skin.

MAY BE HARMFUL IF INHALED. MAY CAUSE RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

Use only with adequate ventilation. Do not eat, drink or smoke when using this product. Avoid contact with eyes, skin and clothing. Keep container tightly closed. Wash thoroughly after handling.

Routes of entry : Dermal contact. Eye contact. Inhalation.

Potential acute health effects

- Eyes** : Hazardous by the following route of exposure: of eye contact (irritant). Inflammation of the eye is characterized by redness, watering and itching.
- Skin** : Hazardous by the following route of exposure: of skin contact (corrosive). Skin contact may produce burns.
- Inhalation** : Hazardous by the following route of exposure: of inhalation.
- Ingestion** : Since the product (welding fumes) is a gas and that it is mostly probable that it will be inhaled more than ingested, please consider first to look at the preventive measures in case of inhalation.

Potential chronic health effects :

Carcinogenicity

Not available.

Mutagenic effects Not available.

Teratogenic effects: Not available.

Medical conditions aggravated by over-exposure : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

(*) See Abbreviations (section 16).

Section 3. Composition, Information on Ingredients

Name	CAS #	% by weight	UN number
Iron	7439-89-6	95 - 100	Not available.
Manganese	7439-96-5	0.9 - 1.85	Not available.

The fumes emitted by the electrodes, in use, are hazardous. This MSDS is written for workers using these electrodes.

See Section 8 for Exposure Limits of the oxides found in the welding fumes.

Section 4. First Aid Measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Section 5. Fire Fighting Measures

- Flammability of the product : Non-flammable. Emits toxic fumes when heated.
- Explosibility : Non-explosive in the presence of the following materials or conditions: open flames, sparks and static discharge, heat and shocks and mechanical impacts.
- Fire-fighting media and instructions : Use an extinguishing agent suitable for the surrounding fire.

Section 6. Accidental Release Measures

- Small/Large Spill and Leak : Use appropriate tools to transfer the spilled solid to a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Section 7. Handling and Storage

- Handling : Avoid contact with eyes. Avoid breathing dust. Do not get on skin or clothing. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Avoid contact of spilled material and runoff with soil and surface waterways.
- Storage : All filler metals in their original, unopened containers should be kept in a relatively dry storage area at temperatures between 15°C (60°F) and 30°C (80°F) and 50% maximum relative humidity.

Section 8. Exposure Controls, Personal Protection

- Engineering controls : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal protection

- Eyes : Safety glasses with side shields. Face shield with radiation shielding.
- Body : Full suit. Fire resistant.
- Respiratory : Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear a canister breathing apparatus (respirator) or a supplied-air respirator, when required, to weld in a confined space or when room exhaust or ventilation does not keep exposure below the acceptable values.
- Hands : Gloves. Fire resistant.
- Feet : Metal cap, safety boots.

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			Notations
Ingredient	List name	ppm	mg/m ³	Other	ppm	mg/m ³	Other	ppm	mg/m ³	Other	
Manganese, as Mn	US ACGIH 6/2013	-	0.1	-	-	-	-	-	-	-	[a]
	AB 4/2009	-	0.2	-	-	-	-	-	-	-	[b]
	BC 7/2013	-	0.2	-	-	-	-	-	-	-	
	ON 1/2013	-	0.2	-	-	-	-	-	-	-	
	QC 12/2012	-	1	-	-	3	-	-	-	-	[c]
Iron	US ACGIH	-	10	-	-	-	-	-	-	-	[d]

Form: [a]Inhalable fraction [b]Respirable fraction [c]fume [d]inhalable particle.

Section 9. Physical and Chemical Properties

- Physical state and Appearance : Solid.
- Color : Reddish-brown. Grayish-white.
- Odor : Odorless.
- Melting/freezing point : 1540 to 2030°C (2804 to 3686°F)
- Specific gravity : Only known value: 7.8 (Water = 1) (iron)
- Solubility : Insoluble in the following materials: cold water and hot water.

Section 10. Stability and Reactivity

- Stability and reactivity : The product is stable.
- Hazardous decomposition products : Metallic oxides. carbon oxides (CO, CO₂) Arc radiation can support the production of ozone and nitrogen oxides.
- Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological Information

Product/ingredient name	Result	Species	Dose	Exposure
Manganese	LD50 Oral	Rat	9 g/kg	-

Chronic effects and other toxic effects on humans : **CARCINOGENIC EFFECTS:** Classified A4 (Not classifiable for humans or animals.) by ACGIH [Manganese]. Contains material which may cause damage to the following organs: blood, kidneys, lungs, the nervous system, upper respiratory tract, central nervous system (CNS).

Hazardous by the following route of exposure: of skin contact (corrosive), of eye contact (irritant), of inhalation.

Section 12. Ecological Information

Ecotoxicity data

Product/ingredient name	Result	Species	Exposure
Iron	Acute EC50 3700 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 33000 to 100000 µg/l Marine water	Crustaceans - Crangon crangon	48 hours
Manganese	Acute LC50 6.48 µg/l Marine water	Fish - Periophthalmus waltoni - Adult	96 hours
	Chronic NOEC 100 mg/l Marine water	Algae - Glenodinium halli	72 hours
	Acute EC50 31000 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 29000 µg/l	Daphnia - Daphnia magna	48 hours
	Acute LC50 28 mg/l Fresh water	Fish - Pimephales promelas	96 hours

Products of degradation : Not applicable.

Section 13. Disposal Considerations

Waste information : Waste must be disposed of in accordance with federal, state and local environmental control regulations. Recycle, if possible. Consult your local or regional authorities.

Section 14. Transport Information

No transport class is found applicable to this product.

Section 15. Regulatory Information

HCS Classification : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Target organ effects

U.S. Federal regulations : TSCA 8(a) CDR Exempt/Partial exemption: Not determined
United States inventory (TSCA 8b): All components are listed or exempted.
SARA 302/304: No products were found.
SARA 311/312 Hazards identification: Delayed (chronic) health hazard
Clean Water Act (CWA) 307: Copper

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Manganese	7439-96-5	0.9 - 1.85
Supplier notification	Manganese	7439-96-5	0.9 - 1.85

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations : **Massachusetts** : The following components are listed: MANGANESE
New York : None of the components are listed.
New Jersey : The following components are listed: MANGANESE
Pennsylvania : The following components are listed: MANGANESE
None of the components are listed.

WHMIS (Canada) : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).
CEPA Toxic substances: None of the components are listed.
Canadian ARET: None of the components are listed.
Canadian NPRI: The following components are listed: Manganese (and its compounds)
Alberta Designated Substances: None of the components are listed.
Ontario Designated Substances: None of the components are listed.
Quebec Designated Substances: None of the components are listed.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Section 16. Other Information

Label requirements : See Section 2.

Hazardous Material Information System (U.S.A.) : Health: 2* Fire: 0 Reactivity: 0

National Fire Protection Association (U.S.A.) : Health: 2 Fire: 0 Reactivity: 0 Other: None

References : - 29CFR Part1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. - CRC Handbook of chemistry and physics, 67th edition. CRC Press inc., Boca Raton, Florida. - Manufacturer's Material Safety Data Sheet. ANSI Z400.1, MSDS Standard, 2004. ANSI Z49.1 Safety in Welding and Cutting, The American Welding Society, P.O. Box 351040, Miami, FL 33135. Canadian Standard Association, CSA W117.2, Code for Safety in Welding and Cutting, 2003.

Abbreviations and acronyms : **ACGIH: American Conference of Governmental Industrial Hygiene.**

ACGIH-A1-Confirmed Human Carcinogen.

ACGIH-A2-Suspected Human Carcinogen.

ACGIH-A3-Animal Carcinogen.

ACGIH-A4-Not Classifiable as a Human Carcinogen.

ACGIH-A5-Not suspected as a Human Carcinogen.

IARC: International Agency for Research on Cancer.

IARC 1: Proven.

IARC 2A: Probable for human.

IARC 2B: Possible for human.

IARC 3: Not classifiable for human.

NIOSH: National Institute of Occupational Safety and Health.

NIOSH +: Proven.

NIOSH: None.

EU: European Union

Carc. 1A : May cause cancer (Known)

Carc. 1B : May cause cancer (Presumed)

Carc. 2 : Suspected of causing cancer

NTP: National Toxicology program.

NTP 1: Known to be human carcinogens.

NTP 2: Reasonably Anticipated to be human carcinogens.

Responsible name : IHS

Date of previous issue : 01/15/2011

Version : 5

Notice to reader

THE INFORMATION, RECOMMENDATIONS AND DATA CONTAINED IN THIS DOCUMENT ARE INTENDED TO BE USED BY PROPERLY TRAINED AND QUALIFIED PERSONNEL ONLY AND AT THEIR SOLE RISKS AND DISCRETION. THE INFORMATION, RECOMMENDATIONS AND DATA HEREIN CONTAINED ARE DERIVED FROM SOURCES WHICH WE BELIEVE TO BE RELIABLE. HOWEVER, AIR LIQUIDE CANADA INC. MAKES NO REPRESENTATION AND GIVES NO WARRANTY OF ANY KIND WHATSOEVER WITH RESPECT TO THEIR ACCURACY OR COMPLETENESS AND ASSUMES NO LIABILITY FOR DAMAGES OR LOSS ARISING DIRECTLY OR INDIRECTLY FROM THEIR USE, WHETHER PROPER OR IMPROPER.

Section 1. Chemical Product and Company Identification

Product name	Classification	Classification
AL-731	GSA:	AWS:
Description	: Nozzle gel for MIG gun nozzles	Generic Code : ALG902
In case of emergency	: 1-514-878-1667	Date of issue : 01/10/2014
Supplier	: Air Liquide Canada Inc., 1250, René-Lévesque Ouest, Suite 1700, Montréal, QC H3B 5E6	

Section 2. Hazards Identification

Physical state and Appearance : Solid. [Gel.]

Emergency overview : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.

WARNING!
ELECTRIC SHOCK can kill.
FUMES AND GASES can be dangerous to your health.
ARC RAYS can injure eyes and burn skin.
NOT EXPECTED TO PRODUCE SIGNIFICANT ADVERSE HEALTH EFFECTS WHEN THE RECOMMENDED INSTRUCTIONS FOR USE ARE FOLLOWED.

Routes of entry : Dermal contact.

Potential acute health effects

- Eyes : Slightly hazardous by the following route of exposure: of eye contact (irritant).
- Skin : Slightly hazardous by the following route of exposure: of skin contact (irritant).
- Inhalation : Non-hazardous in case of inhalation.
- Ingestion : Since the product (welding fumes) is a gas and that it is mostly probable that it will be inhaled more than ingested, please consider first to look at the preventive measures in case of inhalation.

Potential chronic health effects :

Carcinogenicity

Not available.

Mutagenic effects Not available.

Teratogenic effects: Not available.

Medical conditions aggravated by over-exposure : None known.

(*) See Abbreviations (section 16).

Section 3. Composition, Information on Ingredients

Name	CAS #	% by weight	UN number
------	-------	-------------	-----------

No hazardous ingredient.

The fumes emitted by the electrodes, in use, are hazardous. This MSDS is written for workers using these electrodes.

Section 4. First Aid Measures

- Eye contact : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention if symptoms occur.
- Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.
- Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms occur.
- Ingestion : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention if symptoms occur.

Section 5. Fire Fighting Measures

- Flammability of the product : Non-flammable.
Explosibility : Not considered to be a product presenting a risk of explosion.
- Fire-fighting media and instructions : Use an extinguishing agent suitable for the surrounding fire.

Section 6. Accidental Release Measures

- Small/Large Spill and Leak : Use appropriate tools to transfer the spilled solid to a convenient waste disposal container.

Section 7. Handling and Storage

- Handling : Avoid breathing dust.
Storage : Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls, Personal Protection

- Engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protection

- Eyes : Safety glasses with side shields. Face shield with radiation shielding.
Body : Full suit. Fire resistant.
Respiratory : Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear a canister breathing apparatus (respirator) or a supplied-air respirator, when required, to weld in a confined space or when room exhaust or ventilation does not keep exposure below the acceptable values.
Hands : Gloves. Fire resistant.
Feet : Metal cap, safety boots.

Occupational exposure limits

No exposure limit value known.

Section 9. Physical and Chemical Properties

- Physical state and Appearance : Solid. [Gel.]
Color : Blue.
Odor : Odorless.
Melting/freezing point : 68 to 77°C (154.4 to 170.6°F)
Specific gravity : 0.815 to 0.88 [Water = 1]
Solubility : Insoluble in the following materials: cold water and hot water.

Section 10. Stability and Reactivity

- Stability and reactivity : The product is stable.
Hazardous decomposition products : Metallic oxides. carbon oxides (CO, CO₂) Arc radiation can support the production of ozone and nitrogen oxides.
Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological Information

- Chronic effects and other toxic effects on humans : Not available.
Slightly hazardous by the following route of exposure: of skin contact (irritant), of eye contact (irritant).
Non-hazardous in case of inhalation.

Section 12. Ecological Information

- Ecotoxicity data
Products of degradation : carbon oxides (CO, CO₂) and water

Section 13. Disposal Considerations

- Waste information : Waste must be disposed of in accordance with federal, state and local environmental control regulations. Recycle, if possible.
Consult your local or regional authorities.

Section 14. Transport Information

No transport class is found applicable to this product.

Section 15. Regulatory Information

- HCS Classification** : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Not regulated.
- U.S. Federal regulations** : **TSCA 8(a) CDR Exempt/Partial exemption:** All components are listed or exempted.
United States inventory (TSCA 8b): All components are listed or exempted.
SARA 302/304: No products were found.
SARA 311/312 Hazards identification: Not regulated.
- State regulations** : **Massachusetts** : None of the components are listed.
New York : None of the components are listed.
New Jersey : None of the components are listed.
Pennsylvania : None of the components are listed.
None of the components are listed.
- WHMIS (Canada)** : These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.
Not controlled under WHMIS (Canada).
CEPA Toxic substances: None of the components are listed.
Canadian ARET: None of the components are listed.
Canadian NPRI: None of the components are listed.
Alberta Designated Substances: None of the components are listed.
Ontario Designated Substances: None of the components are listed.
Quebec Designated Substances: None of the components are listed.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Section 16. Other Information

- Label requirements** : See Section 2.
- Hazardous Material Information System (U.S.A.)** : Health: 1 Fire: 0 Reactivity: 0
- National Fire Protection Association (U.S.A.)** : Health: 1 Fire: 0 Reactivity: 0 Other: None
- References** : - 29CFR Part 1910.1200 OSHA MSDS Requirements. - 49CFR Table List of Hazardous Materials, UN#, Proper Shipping Names, PG. - Canadian Transport of Dangerous Goods, Regulations and Schedules, Clear Language version 2005. - CRC Handbook of chemistry and physics, 67th edition. CRC Press inc., Boca Raton, Florida. - Manufacturer's Material Safety Data Sheet. ANSI Z400.1, MSDS Standard, 2004. ANSI Z49.1 Safety in Welding and Cutting, The American Welding Society, P.O. Box 351040, Miami, FL 33135. Canadian Standard Association, CSA W117.2, Code for Safety in Welding and Cutting, 2003.
- Abbreviations and acronyms** : **ACGIH: American Conference of Governmental Industrial Hygiene.**
ACGIH-A1-Confirmed Human Carcinogen.
ACGIH-A2-Suspected Human Carcinogen.
ACGIH-A3-Animal Carcinogen.
ACGIH-A4-Not Classifiable as a Human Carcinogen.
ACGIH-A5-Not suspected as a Human Carcinogen.
IARC: International Agency for Research on Cancer.
IARC 1: Proven.
IARC 2A: Probable for human.
IARC 2B: Possible for human.
IARC 3: Not classifiable for human.
NIOSH: National Institute of Occupational Safety and Health.
NIOSH +: Proven.
NIOSH: None.
EU: European Union
Carc. 1A : May cause cancer (Known)
Carc. 1B : May cause cancer (Presumed)
Carc. 2 : Suspected of causing cancer
NTP: National Toxicology program.
NTP 1: Known to be human carcinogens.
NTP 2: Reasonably Anticipated to be human carcinogens.
- Responsible name** : IHS
- Date of previous issue** : 01/15/2011
- Version** : 6
- Notice to reader**

THE INFORMATION, RECOMMENDATIONS AND DATA CONTAINED IN THIS DOCUMENT ARE INTENDED TO BE USED BY PROPERLY TRAINED AND QUALIFIED PERSONNEL ONLY AND AT THEIR SOLE RISKS AND DISCRETION. THE INFORMATION, RECOMMENDATIONS AND DATA HEREIN CONTAINED ARE DERIVED FROM SOURCES WHICH WE BELIEVE TO BE RELIABLE. HOWEVER, AIR LIQUIDE CANADA INC. MAKES NO REPRESENTATION AND GIVES NO WARRANTY OF ANY KIND WHATSOEVER WITH RESPECT TO THEIR ACCURACY OR COMPLETENESS AND ASSUMES NO LIABILITY FOR DAMAGES OR LOSS ARISING DIRECTLY OR INDIRECTLY FROM THEIR USE, WHETHER PROPER OR IMPROPER.

1. Product and company identification

Product name **Hysol MB 50**
 MSDS # 465450
 -historic MSDS #: 03117-BE
 Code 465450-US03
 Product use Metalworking fluid - soluble.
 For specific application advice see appropriate Technical Data Sheet or consult our company representative.
 Manufacturer Castrol Industrial North America, Inc.
 150 W. Warrenville Road
 Naperville, IL 60563
 Supplier Wakefield Canada, Limited
 3620 Lakeshore Blvd West
 Toronto, Ontario, Canada
 M8W 1P2
 Castrol Industrial North America, Inc.
 150 W. Warrenville Road
 Naperville, IL 60563
 Product Information: +1-877-641-1600
 EMERGENCY SPILL INFORMATION: 1 (613) 996-6666 CANUTEC (Canada)
 1 (703) 527-3887 CHEMTREC (USA)

2. Hazards identification

Physical state Liquid.
 Color Yellow. [Light]
 Emergency overview **WARNING !**
CAUSES EYE AND SKIN IRRITATION.
MAY CAUSE RESPIRATORY TRACT IRRITATION.
 Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis. In accordance with good industrial hygiene and safety work practices, airborne exposures should be controlled to the lowest extent practicable. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.
 Routes of entry Dermal contact. Eye contact. Inhalation.
 Potential health effects
 Eyes Causes eye irritation.
 Skin Causes skin irritation. Prolonged or repeated contact can defat the skin and lead to irritation and/or dermatitis.
 Inhalation May cause respiratory tract irritation.
 Ingestion Ingestion may cause gastrointestinal irritation and diarrhea.

See toxicological information (Section 11)

3. Composition/information on ingredients

ingredient name	CAS #	%
Base oil - highly refined	Varies	45 - 50
Amine neutralized carboxylic acids	Not available.	10 - 15
Amine neutralised phosphoric acid esters	Not available.	1 - 5
2-Amino-2-methylpropanol	124-68-5	1 - 5
Triethanolamine	102-71-6	1 - 5
Boric acid	10043-35-3	0.1 - 1

4. First aid measures

Eye contact	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Skin contact	Immediately wash exposed skin with soap and water. Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention.
Inhalation	If inhaled, remove to fresh air. Get medical attention if symptoms occur.
Ingestion	Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If potentially dangerous quantities of this material have been swallowed, call a physician immediately. Get medical attention if symptoms occur.

5. Fire-fighting measures

Flash point	Water content interferes with flash point determination.
Fire/explosion hazards	In a fire or if heated, a pressure increase will occur and the container may burst.
<u>Extinguishing media</u>	
Suitable	Use an extinguishing agent suitable for the surrounding fire.
Not suitable	Do not use water jet.
Fire-fighting procedures	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Hazardous combustion products	Combustion products may include the following: phosphorus oxides carbon oxides (CO, CO ₂) (carbon monoxide, carbon dioxide) nitrogen oxides (NO, NO ₂ etc.)
Protective clothing (fire)	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

Personal precautions	No action shall be taken involving any personal risk or without suitable training. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. In accordance with good industrial hygiene and safety work practices, airborne exposures should be controlled to the lowest extent practicable. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
Environmental precautions	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
<u>Methods for cleaning up</u>	
Large spill	Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.
Small spill	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

7. Handling and storage

Handling	Put on appropriate personal protective equipment (see Section 8). Workers should wash hands and face before eating, drinking and smoking. Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate.
Storage	Store in accordance with local regulations. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.
Other information	DO NOT ADD NITRITES TO THIS FLUID.

8. Exposure controls/personal protection

Occupational exposure limits

Ingredient name	Occupational exposure limits
Base oil - highly refined	ACGIH TLV (United States). TWA: 5 mg/m ³ 8 hours. Form: Mineral oil, mist OSHA (United States). TWA: 5 mg/m ³ 8 hours. Form: Mineral oil, mist
Triethanolamine	CA Alberta Provincial (Canada). Skin sensitizer. 8 hrs OEL: 5 mg/m ³ 8 hours. Issued/Revised: 4/2004 CA British Columbia Provincial (Canada). TWA: 5 mg/m ³ 8 hours. Issued/Revised: 8/2004 CA Ontario Provincial (Canada). TWA: 3.1 mg/m ³ 8 hours. Issued/Revised: 7/2010 TWA: 0.5 ppm 8 hours. Issued/Revised: 7/2010 CA Quebec Provincial (Canada). Skin sensitizer. TWA _{EV} : 5 mg/m ³ 8 hours. Issued/Revised: 1/2000
Boric acid	CA British Columbia Provincial (Canada). STEL: 6 mg/m ³ 15 minutes. Issued/Revised: 4/2005 Form: Inhalable TWA: 2 mg/m ³ 8 hours. Issued/Revised: 4/2005 Form: Inhalable CA Ontario Provincial (Canada). STEL: 6 mg/m ³ 15 minutes. Issued/Revised: 1/2005 Form: Inhalable fraction TWA: 2 mg/m ³ 8 hours. Issued/Revised: 1/2005 Form: Inhalable fraction

While specific OELs for certain components may be shown in this section, other components may be present in any mist, vapor or dust produced. Therefore, the specific OELs may not be applicable to the product as a whole and are provided for guidance only.

Control Measures	Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
Hygiene measures	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing.
Personal protection	
Eyes	Avoid contact with eyes. Safety glasses with side shields or chemical goggles.
Skin and body	Do not get on skin or clothing. Wear suitable protective clothing.
Respiratory	Use adequate ventilation. In accordance with good industrial hygiene and safety work practices, airborne exposures should be controlled to the lowest extent practicable.

The correct choice of protective gloves depends upon the chemicals being handled, the conditions of work and use, and the condition of the gloves (even the best chemically resistant glove will break down after repeated chemical exposures). Most gloves provide only a short time of protection before they must be discarded and replaced. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Gloves should therefore be chosen in consultation with the supplier/manufacturer and with a full assessment of the working conditions.

9. Physical and chemical properties

Physical state	Liquid.
Color	Yellow. [Light]
Odor	Mild.
Odor threshold	Not available.
Flash point	Water content interferes with flash point determination.
Specific gravity	Not available.
Density	957 kg/m ³ (0.957 g/cm ³) at 15.6°C
pH	9.7 [Conc. (% w/w): 5%]
Boiling point / Range	Not available.
Melting point / Range	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Evaporation rate	Not available.
Solubility	Soluble in water.
LogK _{ow}	Not available.

10. Stability and reactivity

Stability and reactivity	The product is stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	Avoid excessive heat.
Incompatibility with various substances	Reactive or incompatible with the following materials: oxidizing materials.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Hazardous polymerization	Under normal conditions of storage and use, hazardous polymerization will not occur.

11. Toxicological information

Classification

Product/ingredient name	IARC	NTP	OSHA
Triethanolamine	3	-	-

ARC :
3 - Not classifiable as a human carcinogen.

Other Toxicity Data
 Reproduction/Developmental: Animal ingestion studies in several species, at high doses, indicate that boric acid and certain inorganic borates can cause reproductive and developmental effects. A human study of occupational exposure to borate dust showed no adverse effect on reproduction.

Target organs due to borates: No target organ has been identified in humans. High Dose animal ingestion studies indicate the testes are the target organ in male animals.

These industrial products are not intended for ingestion.

This product is not considered to pose a reproduction/developmental risk to humans.

This information is provided in keeping with best product stewardship practice and in accordance with hazard communication requirements.

Contains material that may cause target organ damage, based on animal data.
Target Organs: kidneys and liver.

Alkanolamine: This product contains an alkanolamine. In all metalworking fluids containing amines, there is a potential for forming nitrosamines which are animal carcinogens. Therefore, no nitrites or related nitrosating agents should be added to such compositions.

Information

Potential chronic health effects

Carcinogenicity	No known significant effects or critical hazards.
Mutagenicity	No known significant effects or critical hazards.
Teratogenicity	No known significant effects or critical hazards.
Fertility effects	No known significant effects or critical hazards.
Reproductive effects	No known significant effects or critical hazards.
Medical conditions aggravated by over-exposure	None known.

12. Ecological information

Ecotoxicity

No testing has been performed by the manufacturer.

13. Disposal considerations

Waste information

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

NOTE: The generator of waste has the responsibility for proper waste identification (based on characteristic(s) or listing), transportation and disposal

14. Transport information

Not classified as hazardous for transport (DOT, TDG, IMO/MDG, IATA/ICAO)

15. Regulatory information

WHMIS (Canada)

Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Other regulations

Canada inventory All components are listed or exempted.

United States inventory (SCA 8b) All components are listed or exempted.

REACH Status The company, as identified in Section 1, sells this product in the EU in compliance with the current requirements of REACH.

Product name Hysol MB 50

Product code 465450-US03

Page: 5/6

Version 5.02 Date of issue 01/03/2013.

Format Canada

Language ENGLISH

(Canada)

(ENGLISH)

Australia inventory (AIGS)	At least one component is not listed.
China inventory (IECSC)	All components are listed or exempted.
Japan inventory (ENCS)	All components are listed or exempted.
Korea inventory (KECI)	All components are listed or exempted.
Philippines inventory (PICCS)	Not determined.

16. Other information

Label requirements WARNING !
 CAUSES EYE AND SKIN IRRITATION.
 MAY CAUSE RESPIRATORY TRACT IRRITATION.

History

Date of issue 01/03/2013.

Date of previous issue 11/07/2012.

Prepared by Product Stewardship

Indicates information that has changed from previously issued version.

Notice to reader

All reasonably practicable steps have been taken to ensure this data sheet and the health, safety and environmental information contained in it is accurate as of the date specified below. No warranty or representation, express or implied is made as to the accuracy or completeness of the data and information in this data sheet.

The data and advice given apply when the product is sold for the stated application or applications. You should not use the product other than for the stated application or applications without seeking advice from BP Group.

It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. The BP Group shall not be responsible for any damage or injury resulting from use, other than the stated product use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material. Purchasers of the product for supply to a third party for use at work, have a duty to take all necessary steps to ensure that any person handling or using the product is provided with the information in this sheet. Employers have a duty to tell employees and others who may be affected of any hazards described in this sheet and of any precautions that should be taken. You can contact the BP Group to ensure that this document is the most current available. Alteration of this document is strictly prohibited.