



EAGLE GOLD PROJECT
SOLID WASTE AND HAZARDOUS
MATERIALS MANAGEMENT PLAN

Version 2017-02

JULY 2017

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DOCUMENT CONTROL

Submission History

Version Number	Version Date	Document Description and Revisions Made
2013-01	Sep 2013	Original submission to the Department of Energy, Mines and Resources in support of an application for a Quartz Mining Licence allowing for preliminary construction activities and submitted to the Yukon Water Board in support of the application to amend Type B Water Use License QZ11-013. The amendment application considered the use of water and deposit of waste associated with preliminary construction activities and included the construction and operation of the Dublin Gulch Diversion Channel.
2014-01	May 2014	Revisions made in support of an application to the Yukon Water Board for a Type A Water Use License for the full Construction, Operation and Closure of the Project. Version 2014-01 was also submitted to the Department of Energy, Mines and Resources in support of an application for a Quartz Mining Licence allowing the full Construction, Operation and Closure of the Project.
2016-01	Feb 2016	Revisions made in support of an application to the Yukon Water Board for a renewal of the Type B Water Use Licence.
2017-01	Mar 2017	Revisions made to address comments received during the adequacy review of the application to the Yukon Water Board for a Type A Water Use Licence and to address the conditions of the Quartz Mining Licence QML-0011. Version 2015-01 was submitted to the Department of Energy, Mines and Resources and the Yukon Water Board to satisfy SGC's annual reporting requirements.
2017-02	Jul 2017	Revisions made to update the site layout for replacement of an Approved Plan in Quartz Mining Licence QML-0011, act as a "subsequent revision" for QZ14-041, and in support of an application for permits under the Environment Act.

Version 2017-02 of the Solid Waste and Hazardous Materials Management Plan (the Plan) for the Project has been revised in July 2017 to update Version 2017-01 submitted in March 2017. The table below is intended to identify modifications to the Plan and provide the rationale for such modifications

Version 2017-02 Revisions

Section	Revision/Rationale
Figure 2-1 Locations of Solid Waste Handling and Special Waste Storage Areas	<ul style="list-style-type: none"> ▪ Updated site general arrangement and confirmed solid waste handling and special waste storage areas
3.2 Waste Oil and Diesel Fuel	<ul style="list-style-type: none"> ▪ Update to reflect that waste oil may also be used in space heaters in the truck shop and other facilities.
Table 4-1 Hazardous Materials Required for or Generated by the	<ul style="list-style-type: none"> ▪ Inclusion of location of biomedical waste. ▪ Minor changes to locations of storage locations based on the optimized site layout.

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Section	Revision/Rationale
Project	
Appendix D Material Safety Data Sheets	<ul style="list-style-type: none">▪ Added additional MSDSs to better reflect the materials SGC anticipates at the Project site.

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1 INTRODUCTION

1.1 PROJECT SUMMARY

StrataGold Corporation (SGC), a directly held wholly owned subsidiary of Victoria Gold Corp. has proposed to construct, operate, close and reclaim a gold mine in central Yukon. The Eagle Gold Project ('the' Project) is located 85 km from Mayo, Yukon using existing highway and access roads. The Project will involve open pit mining and gold extraction using a three stage crushing process, heap leaching, and a carbon adsorption, desorption, and recovery system over the mine life.

1.2 SCOPE AND OBJECTIVES

This Solid Waste and Hazardous Materials Management Plan describes the management of solid waste and special waste produced by and hazardous materials used by the proposed Eagle Gold Project. All solid wastes and hazardous materials will be handled, stored and disposed of according to the appropriate regulations and permits issued under the Yukon *Environment Act*, *Explosives Act*, and *Transportation of Dangerous Goods Act*, including the existing Waste Management Permit 81-064 and a future Land Treatment Facility Permit as required.

SGC will manage solid wastes, special wastes, and hazardous materials using the following objectives:

- Effective management that enables the safe transport, handling, storage and use of hazardous materials;
- Reduction of waste generated through efficient procurement, recovery, re-use, and recycling;
- Disposal of solid waste in permitted on and off site facilities; and
- On-site treatment/remediation of hazardous waste spills (e.g. hydrocarbon-contaminated soils).

1.3 WASTE MINIMIZATION

SGC will minimize waste by reduction (source control), reusing, recycling, and energy recovery to the greatest extent possible. Waste minimization will include the following measures:

- Reduction of materials before they enter the waste stream via effective procurement so that orders of perishable consumables do not exceed usage rates and generate unnecessary waste. This may also include using effective ways to package materials before or when they are shipped to site, thereby reducing the amount of packaging that goes to the landfill.
- Reuse of materials and products in their original form. This may include refurbishment of a product prior to its reuse provided the product can perform the same function for which it was

originally intended. Recycling involves recovering materials that can be processed into new products. With secondary recovery, a further distinction must be made on whether the recovered product can be used to reproduce the original item or whether it must be “downcycled” into a lower grade product. Downcycling can prolong the useful life of a material. In limited cases, site waste can be downcycled and used for alternative purposes. An example is using waste tires as traffic control/safety structures as discussed in Section 2.5.

- Energy recovery – used materials are combusted to generate energy, which can be used to heat buildings or processes as well as to generate electricity. Energy recovery is a better option than simply incinerating the material because a useful product (heat) is being generated. Energy recovery will be employed by incineration of waste oil to heat facilities as opposed to transportation for off-site disposal.

Waste disposal will be used after consideration of these waste minimization efforts.

1.4 PERMITS

SGC (via Victoria Gold Corp.) currently holds Waste Management Permit No: 81-064 (Appendix A) that authorizes:

- Temporarily store solid waste generated by camp activities;
- Generate, store, or otherwise handle waste oil, waste antifreeze, and waste fuels; and
- Operate equipment for the incineration of special waste (waste oil).

Waste management permits required for the Project are listed in Table 1-1.

Table 1-1: Solid Waste Management Permits Required for the Project

Permit	Required for	Government agency and permit reference
Amended Waste Management Permit	Generating, handling and transporting of special wastes and solid wastes	Environment Yukon
Air Emissions Permit	For open burning of solid waste	Environment Yukon
Burning Permit	For burning of cleared timber and vegetation between April 1 and September 30	Department of Community Services Wildland Fire Management or the Department of Energy, Mines & Resources Client Services & Inspections
Permit/certificate for Transport of Dangerous Goods	Required for transport of hazardous materials including special wastes	Transport Canada
Land Treatment Facility Permit	Establishing a facility for treatment of potential hydrocarbon and hazardous material contaminated soil or snow	Environment Yukon

1.5 DEFINITIONS

- **Bear-proof container:** a container sealed to prevent the escape of attractant odours and strong enough to exclude a bear from the contents.
- **Modified transfer station:** a waste disposal facility where most types of garbage are transferred to another facility for final disposal (usually by burial or incineration); the only exception is that construction and demolition wastes may be buried on-site.
- **MSDS:** Material Safety Data Sheet
- **Non-putrescible Waste:** any waste that contains no more than trivial amounts of putrescible materials. Putrescible waste contains organic matter that is capable of being decomposed and may be capable of attracting or providing food for wildlife.
- **Open Burning:** combustion of material without control of emitted products of combustion to the atmosphere.
- **Putrescible Waste:** waste that contains organic matter and is capable of decomposition. Putrescible waste may attract or provide food for wildlife (e.g., kitchen waste).
- **Solid Waste:** waste that originates from residential, commercial, industrial or institutional sources, from the demolition or construction of buildings or other structures or is specified in a solid waste management plan to be solid waste.
- **Special or Hazardous Waste:** any waste requiring special handling, storage, or destruction and prescribed as special waste by *Yukon Special Waste Regulations*, whether or not the waste has any commercial value or is capable of being used for a useful purpose (e.g., waste oil). For the purposes of this plan, special wastes and hazardous wastes are used interchangeably.
- **Waste:** includes solid and special waste.
- **WHMIS:** Workplace Hazardous Materials Information System.

2 NON-HAZARDOUS SOLID WASTE

The non-hazardous solid waste storage and transfer facility will be located in the south east of the construction laydown area adjacent to the road from camp to the truck shop. Non-hazardous solid wastes will be stored in dedicated, commercially available skips or bins in this area. Putrescible waste and any other waste that will attract wildlife (e.g. food containers, recyclables, etc.) will be stored in commercial bear-proof containers and surrounded by an electric fence which will be operational from May 1 to October 31 to prevent wildlife from entering the area. If there are tracks or other signs of dangerous wildlife attempting to access the waste storage area, the fence will be activated between November 1 and April 30. Figure 2-1 provides the location of the solid waste storage area and other waste storage or disposal areas including the incinerator, landfill, and land treatment facility.

The solid waste storage and transfer facility will be constructed on a concrete pad, or similar containment, that is sloped with berms to contain potentially contaminated run-off within the storage facility in accordance with the *Yukon Solid Waste Regulations*. Run-off from the solid waste storage facility will be pumped from the drains and used as process solution or, if testing shows it is below discharge criteria set in the Water Use License, it may be either directed through the camp septic system or discharged to the environment. This facility will be designed to safely contain:

- Non-hazardous wastes from the camp accommodations, offices and operational areas,
- Putrescible waste in bear-proof containers, and
- Non-hazardous recyclable materials in dedicated recycling bins.

SGC personnel and contractors handling wastes will be trained on the segregation of wastes for temporary storage within the solid waste storage facility prior to disposal.

Table 2-1 provides a solid waste management matrix that outlines the handling, storage and disposal methods for each waste type. Subsequent sections describe the location and methods of solid waste storage and disposal. Putrescible waste will not be stored for a period greater than seven days prior to incineration whereas the duration of storage for solid wastes that require off site disposal and that are not animal attractants will be dependent upon holding container capacity. These wastes that require off site disposal will be transported off site to approved facilities on a regular basis as needed by storage container capacity.

Table 2-1: Handling, Storage, and Disposal of Solid Waste

Waste Type	Description	Storage prior to disposal	Disposal
Kitchen waste	Putrescible food waste	Solid waste storage facility / Bear-proof containers	Incinerate
Office and dormitory	Non-putrescible waste, plastic food containers, waxed paper	Solid waste storage facility / Garbage bins	Incinerate

Section 2 Non-Hazardous Solid Waste

Waste Type	Description	Storage prior to disposal	Disposal
waste	containers, tetra packs, textiles and garbage	and Bear-proof containers (for food packaging etc.)	
Treated wood	Construction materials	Solid waste storage facility	Landfill or transported offsite to a permitted facility
Light plastics and styrofoam	Wrapping films, light packaging, etc.	Solid waste storage facility	Incinerate
Medical waste	Bandages, used first aid products, etc.	Solid waste storage facility	Incinerate
Medical Waste	Sharps	Special Waste Storage Area at truck shop	Off-site disposal Sent to approved facility
Ash	Ash produced by incineration and open burn area	Solid waste storage facility	Landfill
Heavy plastics	Plastic containing chlorine, PVC piping, HDPE liner scraps, construction material packaging, etc.	Solid waste storage facility	Landfill
Aerosol containers	Used aerosol containers from kitchen, dormitory, process facility, truck shop etc.	Solid waste storage facility	Landfill
Alkaline batteries	Used batteries from appliances etc.	Solid waste storage facility	Landfill
Lead acid batteries	Used batteries from vehicles and heavy equipment	Special Waste Storage Area at truck shop	Off-site disposal Sent to approved facility
Recyclable containers	Aluminum, glass, and plastic beverage containers	Solid waste storage facility / Recycling bins	Off-site disposal Mayo recycling center
Waste oil	Waste oil from vehicles, heavy equipment and generators	Special Waste Storage Area at truck shop	Waste oil burner
Lubricants, filters and packaging	Grease, hydraulic fluids, antifreeze, oil drums, oil filters, absorbent pads, etc.	Special Waste Storage Area at truck shop	Incinerate filters and packaging Landfill for absorbent pads Waste burner for lubricants
Special/Hazardous waste	Filters, hazardous material packaging, reagent packaging, spill cleanup, paint tins, miscellaneous hazardous waste	ADR Special Waste Storage Area / Stored in dedicated labeled bins	Off-site disposal Sent to approved facility or returned to supplier as needed
Reagent drums (empty and rinsed)	Process and mine water treatment related reagent containers.	Special Waste Storage Area at ADR facility	Landfill for non-hazardous waste containers or off-site disposal for hazardous waste containers

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Section 2 Non-Hazardous Solid Waste

Waste Type	Description	Storage prior to disposal	Disposal
Steel	Scrap, used or discarded engine parts, steel frames, construction offcuts, crusher linings, etc.	Solid waste storage facility or adjacent to truck shop	Off-site disposal Sent to scrap dealer prior to closure and reclamation
Tires (under 24.5" diameter)	Worn tires or damaged tires from light vehicles	Solid waste storage facility or adjacent to truck shop	Off-site disposal Small tires will be sent to Yukon tire disposal depots
Tires (over 24.5" diameter)	Worn tires or damaged tires from heavy equipment	Solid waste storage facility or adjacent to truck shop	Barrier use or landfill/co-disposal within Waste Rock Storage Facilities
Untreated wood and paper products	Construction materials, paper / cardboard office waste, used reagent (rinsed) and cement bags, etc.	Open burn area	Open burn

2.1 RECYCLABLE MATERIAL

Recyclables will be sorted and stored in dedicated and segregated recycling bins prior to transfer off site for donation to local charity for refund and/or recycling depot. The community of Mayo maintains a depot for certain recyclable materials. Recyclable materials not accepted by a local charity or by the Mayo depot will be shipped to Whitehorse. Recyclables will be washed to minimize wildlife attractants prior to storage. Recyclable materials include:

- Aluminum and/or tin cans
- Plastic bottles and/or containers
- Glass bottles

2.2 INCINERATION

The solid waste storage area will include a dual chambered industrial incinerator to incinerate solid waste including putrescible waste, domestic waste (office and dormitory), certain bio-medical wastes (e.g. dressings, bandages, etc.) and various packaging. Recyclable materials, specific bio-medical wastes (e.g. sharps) and other special wastes will be removed from the incinerator waste stream and be disposed of via methods described by the special waste management plan or recycled off site. Office and dormitory garbage bins will be transferred to bear-proof containers located in the solid waste storage area. Putrescible waste from the camp kitchen facilities will be placed into the bear-proof containers by kitchen staff. Putrescible waste will not be stored for a period of greater than seven days prior to incineration. Bottom ash from the incinerator will be disposed of in the on-site landfill area.

The incinerator will be inspected and maintained by Site Operations personnel, and all maintenance activities will be logged. The incinerator operator will be a trained employee or contractor familiar

with the incinerator operating manual, and will use the following standard operating procedures when using the incinerator:

- Complete the incinerator pre-operational inspection and checklist.
- Ensure that the integral components of the incinerator including the burners, gauges, valves, lines, walls, doors and exhaust components, are maintained in accordance with the manufacturer's specifications and in such a manner as to provide optimum control of contaminant emissions during all operating periods.
- Ensure all waste is completely reduced to ash during incineration before completion.
- Complete the Incinerator Log for all incineration activities.
- Incinerator Log sheets will be provided to the Environmental Coordinator or designate weekly.

An example Incinerator Log sheet is attached to this plan as Appendix B. The pre-operational inspection will be conducted to ensure the incinerator is ready and safe prior to use. The inspection must be performed by a qualified operator designated to use the equipment prior to operation. Operators are to inform the maintenance department if equipment deficiencies are discovered prior to use. The maintenance department will arrange for maintenance as required. The inspection checklist will include verification of the following items:

- The appropriate Personal Protective Equipment (PPE) is used.
- Ash bin is empty.
- Burner chamber is clean without presence of hot ambers or flames.
- The door to burner chamber is in working order and the seal around the door frame is without rips, tears or absent sections.
- The blower safety relay switch is not stuck and the retract spring is in good working order.
- The fire extinguisher is present and operational.
- The fuel shut off is free moving.
- All fuel lines are inspected for leaks or abrasions.
- No flammable material is in the immediate area outside of the incinerator.

2.3 OPEN BURNING

SGC will designate a suitable site for the open burning of brush generated from site and associated infrastructure development areas, particularly during the initial construction phase. The designated area will be cleared of vegetation with a setback of 30 m from watercourses or dwellings or as may be required by a burning permit. SGC will obtain a burning permit from Yukon Government

Community Services Wildland Fire Management or the Client Services District Office prior to open burning.

The burning permit application will include best management practices — to safely burn the brush waste and to ensure compliance with Yukon Government Community Services burning permit requirements. The burning permit application will include the following information:

- Location of the site where burning will take place,
- The estimated volume and type of material to be burnt,
- The timeframe in which the burn will take place,
- The weather criteria for the burn i.e. the weather conditions that will dictate cancellation of the planned burn such as high winds,
- The equipment and trained personnel who will be onsite for the burn.

Non-hazardous solid waste suitable for open burning will be burned via the following standard procedures:

- Ensure a natural or artificially induced draft is present when solid waste is burned, that all material is completely reduced to ash and that no combustibles are allowed to smolder (burn and smoke without flame).
- Divert surface water run-off from the open burning area.
- Do not use waste petroleum products to assist with open burning of solid waste.
- Other than waste plywood and particle board, do not open burn treated wood products including but not limited to wood products that have been treated with creosote, chromium copper arsenate [CCA], pentachlorophenol, or any type of paint.

2.4 LANDFILL

Non-putrescible, non-hazardous waste not incinerated will be transported to an on-site landfill area. The landfill will be used throughout the life of the Project and will be operated in a manner that will facilitate landfill closure at the cessation of operations.

The landfill area is a flat cleared area with cells for the burial of material. The landfill will contain a sea-can container to temporarily house waste generated by contractors and/or operations personnel until it is segregated for either incineration or off-site disposal or recycling.

The landfill area has been located according to the siting requirements for Commercial Dumps provided by Environment Yukon (January 2016). The landfill area is not located on permafrost, and meets setback requirements outlined by Environment Yukon.

A sign at the entrance to the landfill will list conditions for use, emergency contacts and procedures, and items that may not be disposed of within the facility such as: batteries, special (hazardous) wastes, acids, corrosives, solvents, oily wastes, explosives, or unsterilized medical waste. As per

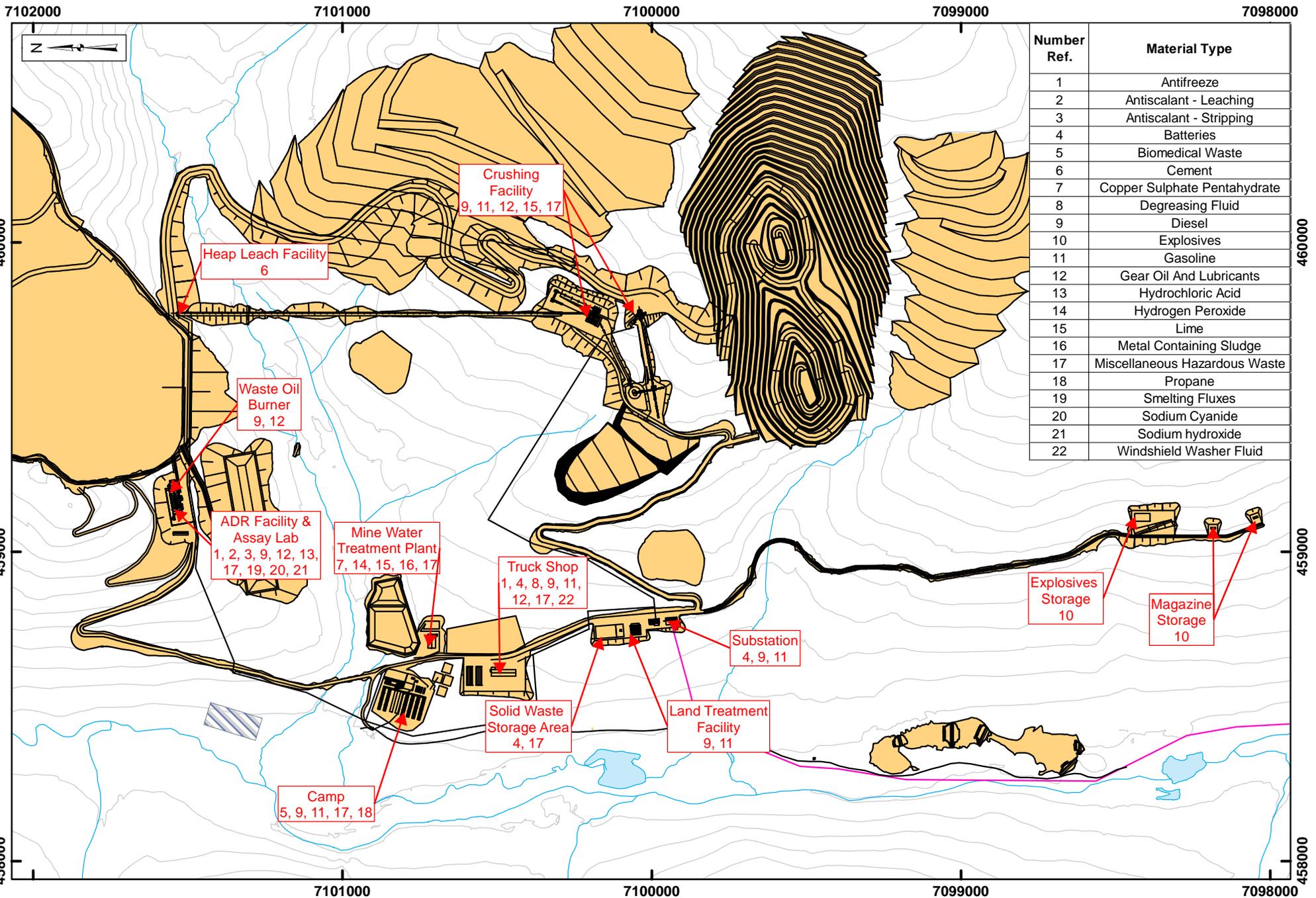
Environment Act Permit 81-064, a gated electric exclusion fence will surround the landfill and will be operational from May 1 to October 31 to prevent wildlife from entering the encompassed areas of the site. If there are tracks or other signs of dangerous wildlife attempting to access the landfill, the fence will be activated between November 1 and April 30.

Non-hazardous solid waste suitable for landfill will be buried via the following standard procedures:

- Burial (or deposition) of special wastes or materials containing contaminated material containing contaminants in excess of the industrial land use standards in the *Contaminated Sites Regulation* into the landfill is prohibited.
- Solid waste will be loaded into an active landfill cell and covered with overburden material to a depth of 0.1 metres to prevent windblown solid waste and attraction of birds after every 0.5 metres of solid waste is deposited. Cover material may not reasonably be obtained due to snow. During winter months solid waste will be stored in active land fill cells between November 1 and April 15 until cover material is available for use.
- Dispose of ash from incinerator or open burning by:
 - Placing it in a cell and immediately covering it with overburden material to a depth of 0.1 meter to prevent dispersal by wind; or
 - Placing it in a covered metal container suitable for transporting it to a permitted solid waste disposal facility.
- Divert surface water run-off away from the landfill cell.

2.5 USED TIRES

Worn or damaged tires will be collected and stored at the truck shop prior to disposal. Tires not used as protection barriers at various locations on-site will be disposed of in accordance with the Yukon Used Tire Program. Tires with a rim size of 24.5 inches diameter or less will be transported off-site to a depot that accepts tires in accordance with the Yukon Used Tire Management Program. Yukon Government does not currently have a facility to dispose of tires with a rim size of greater than 24.5 inches. Large tires that cannot be used for protection barriers will be disposed of in the on-site landfill or via encapsulation in the Waste Rock Storage Areas during operations.



Legend:

- Facility
- Watercourse
- Reserved Area
- Transmission Line
- Contours (25m)



0 125 250 500
Meters

Projection: NAD 83 Zone 8N
Date: 2017/07/11

Drawn By: HC
Figure: 2-1

**EAGLE GOLD PROJECT
YUKON TERRITORY**

**Locations of Solid Waste Handling
& Special Waste Storage Areas**

3 SPECIAL WASTE

Special wastes are defined as any waste requiring special handling, storage, or destruction and prescribed as special waste by *Yukon Special Waste Regulations*, regardless of whether the waste has any commercial value or is capable of useful purpose (e.g., waste oil burning for heat). For the purposes of this plan, special wastes and hazardous wastes are used interchangeably.

The following guidelines from Environment Yukon were used in the preparation of this plan:

- Environmental Programs – Storage and Handling of Special Waste, 2015
- Environmental Programs - Oil Water Separators, June 2013
- Environmental Programs – Special Waste Transportation, May 2013
- Environmental Programs – General Information on Waste Oil, November 2015
- Environmental Programs – Guidelines for the Management of Biomedical Waste In Yukon, March 2011
- Environmental Programs - Requirements for Commercial Dumps, January 2016
- Environmental Programs – Lead Disposal, July 2014

Hazardous materials will be recycled, re-used, recovered, or consumed to the extent economically and logically feasible. Hazardous wastes are defined as residual hazardous materials, whether in their original form or different material state/mixture. Hazardous wastes will be contained in purpose built containers prior to disposal.

Special wastes will be collected and stored in specially marked, dedicated containers until shipment to an appropriate treatment or disposal facility. Areas where special wastes will be generated and stored include the following:

- Process Facility – Adsorption, Desorption, Recovery (ADR) plant
- Truck Shop
- Mine Water Treatment Plant (MWTP)
- First Aid Room
- Assay Laboratory

The ADR plant, the truck shop and the MWTP will be constructed on concrete slabs with curbed sides. These facilities will include sumps to collect spills, and process waste. Liquids captured by the sumps will be treated as special wastes and disposed of according to the specific waste type. All locations used for the storage of special wastes will be covered or otherwise protected to ensure that receptacles containing special waste are not unduly exposed to inclement weather. Special wastes generated by the Project will include:

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Section 3 Special Waste

- Hydrocarbon Contaminated Soils (from spills)
- Waste Oil and Diesel Fuel
- Used Filters
- Waste Antifreeze
- Waste Solvents and Lubricants
- Used Lead Acid Batteries
- Aerosol Containers
- Waste Processing Reagents and Containers
- Laboratory Contaminated Crucibles, Cupels, Glassware, and associated Solutions,
- Biomedical Wastes

Brief descriptions of the special (hazardous) waste management practices are provided as follows and further details on the best management practices for each of these materials are provided in Appendix C. Estimated quantities of special wastes produced by the Project are provided in Table 3-1.

Table 3-1: Estimated Special Waste Quantities Generated by Project Phase ¹

Waste Type	Construction	Operations	Closure and Reclamation	Total
▪ Oil and lubricants (liters)	20,000	170,000	10,000	200,000
▪ Antifreeze (liters)	1,000	8,500	500	10,000
▪ Hydraulic fluid (liters)	1,500	12,750	750	15,000
▪ Used oil filters	4,000	34,000	2,000	40,000
▪ Batteries	100	850	50	1,000
▪ Aerosol cans	1,000	8,500	500	10,000
▪ Miscellaneous spent laboratory materials – cupels, crucibles, glassware, etc. (tonnes)	-	Less than 1 tonne	Less than 1 tonne	Less than 2 tonnes
▪ Miscellaneous reagent and chemical containers	150	1,275	75	1,500
▪ Biomedical waste	Minor quantities	Minor quantities	Minor quantities	Minor quantities

¹ Estimates are approximate and will require update once the project is commissioned

3.1 LAND TREATMENT FACILITY

A land treatment facility will be constructed for the progressive treatment and remediation of hydrocarbon contaminated soils as and when required. The land treatment facility will be located adjacent to the landfill area and will consist of two cells that are 10 m by 10 m each. If soil permeability in the facility is greater than 10^{-5} cm/s, a geo-membrane liner will be installed and covered with fine grained gravel or soil to temporarily store and land farm contaminated soil. The area will be leveled and sloped such that run-off from the area can be contained and treated prior to release to the receiving environment.

Hydrocarbon contaminated soils will be stored within the land treatment facility and remediated by regular tilling (aeration) and standard northern bioremediation practices. Snow will be removed prior to spring freshet to prevent excess runoff from the facility. Runoff from the facility will be collected in a sump and treated via an oil water separator in the sump prior to discharge to ground. The construction of dual cells will allow active treatment of contaminants in cell 1 while remediated soils can be stored in cell 2 prior to reuse. No new contaminated soil will be applied when the soil is frozen, covered in snow or saturated with water. Contaminated soils undergoing remediation treatment will be tested for hydrocarbons prior to treatment and will be tested for F1/F2/F3/F4 (one test per 50 cubic meters). Application of fertilizer and water will consist of approximately 1 kg fertilizer per ton and 100 liters of water per ton however water content may vary depending on moisture content of the contaminated soils. Aeration of hydrocarbon soils mix and introduce oxygen to reaction - aeration will occur every two weeks - testing of contaminated soils every 4 weeks. Once the material has been remediated to meet *Yukon Contaminated Sites Regulations Numerical Soil Standards for Industrial Land Use*), SGC will obtain approval from Environment Yukon to remove the material from the treatment facility for re-application as required around the Project site such as cover for the landfill area.

3.2 WASTE OIL AND DIESEL FUEL

The major sources of waste oil are from mobile equipment and generators. The most common types of used oil for the Project include crank case oil, gear oil, transmission fluid, and hydraulic oil. Waste oil will be stored in a 10,000-litre storage tank. During construction all waste oil will be stored or may be used in space heaters in the truck shop and other facilities until the commissioning of the process solution heating boiler during operations. If waste oil in excess of site storage is generated during construction, the storage tank will be pumped out and disposed of at an approved facility.

During operations, waste oil will be burned along with diesel fuel in the process solution-heating boiler and may also be used in space heaters in the truck shop and other facilities. The waste oil storage tank will be stored in a secondary containment facility located adjacent to the ADR building. The design of the solution-heating boiler will be approved by the Canadian Standards Association, the Underwriter Laboratory, the Underwriters Laboratory Canada, or by the Yukon Government Protective Services Branch. Oil stored for use in the solution heating boiler will comply with Environment Yukon guidelines pertaining to contaminant concentrations in the used oil. Waste oil blending will not be done without written authorization from an environmental protection officer to

ensure that the procedure has been followed correctly so that the blended waste oil will be suitable for use in a waste oil burner. This procedure will also apply to small quantities of diesel from used fuel filters, diesel spills or diesel collected in spill trays during maintenance.

Used hydrocarbon contaminated absorbent pads will be wrung out to ensure they are drained of liquid oil waste and disposed of in the land fill. Waste oil filters and hydraulic hoses will be drained of oil and incinerated. Prior to incineration, hoses will be drained and drip dried, filters will be punctured and set in a tray to allow oil to drain for approximately 24 hours. Empty oil drums will be drained prior to being shipped offsite to a designated recycling facility.

An oil and water separator will be used in the truck shop to capture residual hydrocarbons for disposal. Separated water will be dealt with in accordance with the Environmental Programs - Oil Water Separators guidelines prior to any discharge.

3.3 WASTE ANTI-FREEZE

Used anti-freeze will be stored in designated leak free containers prior to disposal or recycling at permitted facilities. All hazardous wastes will be transported offsite in accordance with the *Transportation of Dangerous Goods Act* and the *Yukon Special Waste Regulations*.

3.4 WASTE SOLVENTS AND LUBRICANTS

Small quantities of waste solvents and lubricants will be generated through routine maintenance and repair of equipment.

Solvents and lubricants will be collected and stored in dedicated drums for regular shipment to a permitted recycle or disposal facility. Containers will be appropriately secured and segregated from other waste products during storage and transportation. All hazardous wastes will be transported offsite in accordance with the *Transportation of Dangerous Goods Act* and the *Yukon Special Waste Regulations*.

3.5 USED-LEAD-ACID BATTERIES

Commercially available high-density polyethylene (HDPE) storage bins will be located within the truck shop for the secure storage of spent lead-acid batteries. Once the bins are full, the batteries will be transported to a battery supplier or other institution capable of safely disposing of the batteries.

The following steps will be followed to help prevent acid leaks and spills and to avoid contamination of the storage site:

- Batteries will be placed on wooden pallets in secondary containment (e.g. on a liner or berm) to prevent the escape of acid. Pallets will not be stacked more than two high.
- Batteries will not be stacked more than three layers thick and each layer will be separated with a sheet of plywood or other suitable material.

3.6 BIOMEDICAL WASTES

A small amount of biomedical waste will be generated at the first aid room. Biomedical wastes will be collected and stored in designated purpose-built containers and disposed of primarily via incineration or at an approved off-site facility (e.g., for waste sharps). Biomedical waste containers will be leak resistant, tightly sealed, puncture resistant, color coded and will be stored in a locked facility within the first aid room only accessible by trained medical personnel. Biomedical waste containers will be color coded as follows:

- Human Anatomical — Red
- Animal — Orange
- Microbiology and lab — Yellow
- Human blood and bodily fluid — Yellow
- Waste sharps — Yellow

3.7 USED AEROSOL CONTAINERS

Used aerosol containers will be stored in dedicated bins in the solid waste storage facility. Aerosol containers will be punctured to release remaining contents and pressure prior to disposal in the landfill.

3.8 WASTE PROCESSING REAGENTS AND CONTAINERS

Minimal amounts of reagents will be wasted during operations through the implementation of diligent reagent management practices. This is particularly applicable to reagents such as cyanide, hydrochloric acid and sodium hydroxide. A full list of hazardous materials used as reagents is listed in Section 4 of this plan. In the event of a reagent spill, the material would be contained, recovered and if possible returned and used in the process or mine water treatment circuit. Where this is not possible, the recovered reagent material and associated spill cleanup materials will be contained in special waste containers such as HDPE bins prior to transportation offsite to a licensed disposal facility. Reagents not used will never be mixed and will be segregated prior to disposal.

Reagent bags will be rinsed and incinerated. Rinse water will be collected and used for process solution or if testing shows it is below discharge criteria set in the Water Use Licence, it may be discharged to the camp septic system. Reagent containers will be returned to reagent suppliers for re-use or rinsed, crushed and disposed of on site in the landfill as appropriate. Contaminated reagent containers or packaging that cannot be effectively rinsed or returned to the supplier will be stored in suitable bins at the special waste storage facility prior to transportation offsite to a licensed disposal facility.

3.9 LABORATORY WASTES

As a precautionary measure all laboratory waste will be treated as hazardous and stored in the special waste storage facility. Prior to storage, where possible hazardous materials/wastes are destroyed or the hazardous nature of the waste is reduced in a safe manner. For example, hydrochloric acid laboratory ware will be washed to dilute and buffer the concentration of any residual acid remaining on the glassware to a safe level prior to storage and disposal.

Laboratory personnel will receive Workplace Hazardous Materials Information System (WHMIS) training to ensure they are capable of identifying and managing hazardous wastes. The procedures for managing various types of hazardous materials and wastes resulting from the laboratory will be in accordance with the MSDS for the various materials/chemicals used.

4 HAZARDOUS MATERIALS MANAGEMENT

The Project will include the use of materials associated that are classified as hazardous. This section of the Plan includes a description of hazardous materials management with the following objectives:

- Effective management of hazardous materials;
- Identify the planned hazardous materials that will be transported, stored or utilized on site and provide the relevant Material Safety Data Sheets (MSDS); and
- Describe storage, transportation and handling procedures to minimize the potential for spills.

Table 4-1 lists the hazardous materials used or produced by the Project as well as the storage locations for each. Figure 2-1 depicts storage areas for hazardous materials. Consumables used by the Project classified as hazardous materials will be procured from suppliers that follow best practices in transport, handling, and storage of hazardous materials.

Table 4-1: Hazardous Materials Required for or Generated by the Project

Type	Name	Use	Storage location
Solvent	Antifreeze	Machinery coolant	Truck shop storeroom, in supplier container
Solvent	Antiscalant – leaching circuit	Prevents scale in cyanide distribution system	ADR facility reagent storage, in supplier container
Solvent	Antiscalant – stripping circuit	Prevents build-up of scale in gold stripping system	ADR facility reagent storage, in supplier container
Battery	Lead acid batteries	Mining machinery	Truck shop storeroom, in a cool dry area Old batteries in bin/ on a pallet
Waste	Biomedical Waste	First aid	Camp medical facility/clinic
Reagent	Cement	Agglomeration of ore stacked in HLF	Silos at the HLF
Reagent	Copper sulphate pentahydrate	Cyanide detoxification	Mine Water Treatment Plant in supplier containers
Solvent	Degreasing fluid	Washing of engines and parts in workshop	Truck shop storeroom, in supplier container
Petroleum product	Diesel	Mining fleet, vehicle and machinery fuel	Fuel storage facility at the substation and crusher facility
Blasting compound	Explosives	Blasting	Explosives magazine and storage facility
Petroleum product	Gasoline	Various non-diesel equipment on site	Fuel storage facility located at the substation
Lubricating oil	Gear oil and lubricants	Machinery lubrication	Truck shop storeroom, in supplier containers or drums

Eagle Gold Project

Solid Waste and Hazardous Materials Management Plan

Section 4 Hazardous Materials Management

Type	Name	Use	Storage location
Reagent	Hydrochloric acid	Washing of activated carbon prior to re-use in stripping process	ADR facility stripping circuit reagent storage area, in supplier container/ drum
Reagent	Hydrogen peroxide	Cyanide detoxification	Mine Water Treatment Plant in supplier containers
Reagent	Lime (calcium hydroxide)	Improves stability of ore in the heap leach process	In silos at the heap leach facility, ore preparation complex
Waste	Metal containing sludge	Water treatment residue	Mine Water Treatment Plant
Waste	Miscellaneous Hazardous waste	Hazardous material waste not classified such as fluorescent tubes or paint	Special waste storage area
Gas	Oxygen	First aid for cyanide exposure	Camp medical facility/clinic
Petroleum product	Propane	Heating fuel	Propane farm adjacent to camp
Reagent	Smelting fluxes	Used during smelting (10% Borax) (80% Flourspar) (5% NaCO ₃)(5% Sodium Nitrate)	ADR facility/ refinery area
Reagent	Sodium cyanide	Gold extraction from ore	ADR facility leaching circuit reagent storage area
Reagent	Sodium hydroxide	Used for the desorption of gold from the activated carbon	ADR facility leaching circuit reagent storage area, in supplier packaging
Solvent	Windshield washer fluid	Windshield washing	Truck shop storeroom, in supplier container

4.1 HAZARDOUS MATERIAL MANAGEMENT PRACTICES

Detailed best management practices that will be followed for the transportation, storage, use and disposal of hazardous materials are provided in Appendix C of this Plan. Special (hazardous) waste management practices for the Eagle Gold Project are provided in Section 3 above.

SGC will establish and maintain inventories of hazardous materials stored and used for the Project. The nature of the inventories will depend on the type of material. For example, the volume of diesel and other fuels stored and distributed to vehicles or equipment on site will be inventoried. Strict control of materials such as sodium cyanide will be implemented and records of delivery (manifests), inventory and usage will be kept.

Personnel will follow established procedures designed to protect themselves and the environment. Personnel will be equipped with the proper PPE required to safely handle the hazardous materials that they will be exposed to as part of their job. Prior to working with hazardous materials, personnel will be familiar with the standard operating procedures and the associated MSDS for each item. Newly hired personnel will be trained and mentored by experienced personnel prior to being permitted to work with hazardous materials. Personnel will be required to demonstrate competence with hazardous materials to the supervisors prior to completion of training and/or mentoring program.

Safety meetings will be attended by all personnel. Any incidents or near misses will be discussed during these meetings in an effort to raise awareness of any potential and existing hazards. All changes in procedures, equipment, or hazardous material use will be communicated to personnel.

Hazardous materials will be recycled, re-used, recovered, or consumed to the extent economically and logically feasible. Hazardous wastes are defined as residual hazardous materials, whether in their original form or different material state/mixture. Hazardous wastes will be contained in purpose built containers prior to disposal.

Delivery points will be demarcated and secured to prevent unintentional entry by untrained personnel. Where required, gantries fitted with hoists or forklifts will be available at delivery points to minimize manual handling of hazardous materials. Where hazardous materials are delivered in a liquid or gaseous state from a bulk container, facilities will utilize leak proof couplings.

4.2 WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

Workplace Hazardous Materials Information System (WHMIS) training will be mandatory for SGC personnel that transport, use or dispose of hazardous materials. Personnel will undertake WHMIS training upon commencing employment as part of an induction program. Personnel will be re-certified every 3 years.

WHMIS will be implemented on site by the SGC Health & Safety department by requiring:

- Communication between hazardous material suppliers prior to dispatching of materials;
- Adequate storage infrastructure in line with industry standards;
- The prominent display of valid MSDS and WHMIS signage on hazardous material storage areas;
- Regular inspection of containers and storage areas;
- Availability and use of appropriate personal protective equipment;
- Provision of emergency preparedness equipment such as fire extinguishers, eye flushing points, and first aid supplies;
- Availability of appropriate spill kits for all hazardous materials;
- Training of personnel handling hazardous materials;
- Ensuring that safe and secure storage of hazardous materials is implemented to avoid potentially dangerous chemical interactions;
- The implementation of monitoring systems for hazardous material storage and handling areas, such as monitoring of HCN gas in Cyanide storage areas.

4.3 MATERIAL SAFETY DATA SHEETS

Current Material Safety Data Sheets (MSDS) provided by the manufacturer will be available to all personnel. The MSDS documentation will be available at every location where hazardous materials are stored; in addition MSDS documentation will be available from the SGC Health & Safety department. Hazardous materials storage areas will include signage using standard WHMIS symbols and descriptions of materials stored in each area. Appendix D provides the current MSDS sheets for each of the hazardous materials to be used at the Project site. MSDS sheets will be replaced if necessary once final selection and procurement of hazardous materials has been completed.

4.4 TRANSPORTATION OF DANGEROUS GOODS

Personnel involved in the transportation of dangerous goods will be given certified training in WHMIS and Transportation of Dangerous Goods (TDG). Training will be per Transport Canada training requirements including:

- The nine classifications of hazardous materials
- Documentation requirements for transportation of hazardous materials
- Understanding safety marks, labels and placards required for transportation of hazardous materials
- Safety requirements for Transportation of Dangerous Goods
- Spill response procedures for transportation of hazardous materials

SGC will ensure that personnel required to oversee and be involved with the transportation of dangerous goods will hold valid certificates of competency and appropriate regulatory approvals under the *Yukon Special Waste Regulations* during any time in which they transport dangerous goods.

In addition to the above provisions it is noted that hazardous materials will be delivered to the Eagle Gold site throughout the mine's operational life by suppliers and personnel not employed directly by SGC. Therefore, SGC will require transport companies to be in compliance with the *Transportation of Dangerous Goods Act* and Regulations and the Yukon Special Waste Regulations. SGC will also maintain emergency response capabilities for spills that may occur at the mine site. To the extent possible, the transportation of hazardous materials will only take place when road conditions are suitable. During winter months transport may be curtailed during periods when the roads are not safe for trucks due to ice or snow related hazards.

When road conditions are uncertain for the transportation of hazardous materials, the vehicle or truck will be accompanied by an escort vehicle between the mine site and the Silver Trail.

The project site is accessible by government maintained roads with the exception of the Haggart Creek Road (HCR). SGC will maintain the HCR to provide a safe and effective transportation route for all hazardous materials required on site. The HCR is currently wider than a single lane and requires minor upgrades to support Project traffic volumes and loads. It has been proposed that the

HCR be upgraded to a two-way, one-lane, radio controlled access road. Road upgrades will be in accordance with design standards for Low Volume Roads (LVR 50) as specified by the Transportation Association of Canada (TAC).

The following measures will be implemented to minimize the potential for transportation accidents.

- SGC will work with the Department of Highways and Public Works to ensure both public and private portions of the access road are properly maintained and upgraded as required.
- SGC will ensure all hazardous materials are transported and handled in accordance with the *Transportation of Dangerous Goods Act* and Regulations, and the *Yukon Special Waste Regulations*.
- The HCR will be a one-lane radio controlled access road with regular vehicle pull-outs to allow passing; signage will be posted to ensure non-Project traffic is aware of radio protocols. Speed limits will be posted and enforced.
- Wildlife crossings along the road will be identified and signage provided in high risk areas. Crossing areas will be plowed during winter to maintain escape points.
- SGC will have on-site personnel with emergency first-aid training to provide primary care in the event of an accident per the Emergency Response Plan for the Project.

4.5 EMERGENCY RESPONSE TO HAZARDOUS MATERIALS / WASTE RELEASES

A site specific spill response plan and emergency response plan has been developed for the Project. A hazardous material spill will trigger incident response procedures contained in the Emergency Response Plan in terms of directing of external assistance and notifications, personnel responsibilities and Mine Rescue Teams preparations. The Spill Response Plan outlines the equipment to be used and the procedures applicable to specific types of spills.

5 INSPECTIONS AND RECORD KEEPING

Regular inspections and record keeping for solid waste, special waste, and hazardous material management will be conducted in accordance with the *Yukon Environment Act* and Regulations.

5.1 INSPECTION REQUIREMENTS

Table 5-1 presents the inspection requirements for all hazardous material storage, waste storage, and disposal areas.

Table 5-1: Inspection Requirements

Area	Requirement	Frequency
Waste storage areas	<ul style="list-style-type: none"> Verify segregation and proper storage of waste Electric fence inspection to ensure it is functioning properly to deter wildlife (check charge level and potential grounding) Inspect surface water runoff interception (non-contact water diversion cut offs and contact water into sumps or treatment) Ensure sign outside facility includes required information including wastes allowed in facility, spill response reporting phone numbers, etc. Post copy of <i>Environment Act</i> permit and Solid Waste Management Plan 	Weekly
Land fill area	<ul style="list-style-type: none"> Electric fence inspection to ensure it is functioning properly to deter wildlife (check charge level and potential grounding) Inspect surface water runoff interception (non-contact water diversion cut offs and contact water into sumps or treatment) Ensure no wildlife attractants are in landfill area including kitchen waste Ensure no hazardous wastes are present; if so transfer to appropriate storage prior to off-site disposal Inspect cover material on deactivated cells to ensure proper placement Ensure sign outside facility includes required information including wastes allowed in facility, spill response reporting phone numbers, etc. Post copy of <i>Environment Act</i> permit and Solid Waste Management Plan 	Weekly
Incinerator	<ul style="list-style-type: none"> Inspection and maintenance of incinerator and all components including fuel tanks and supply. Ensure sign outside facility includes required information including wastes allowed in facility, spill response reporting phone numbers, etc. Post copy of <i>Environment Act</i> permit and Solid Waste Management Plan 	Monthly or as required
Waste oil burner	<ul style="list-style-type: none"> Inspection and maintenance of all components and storage of waste oil and diesel. 	Monthly or as required

Section 5 Inspections and Record Keeping

Area	Requirement	Frequency
Land treatment facility	<ul style="list-style-type: none"> • Inspection of cells 1 and 2 for usage and fertilizer application • Testing of remediated soils • Inspection of the surface water drainage sump • Ensure sign outside facility includes required information including wastes allowed in facility, spill response reporting phone numbers, etc. • Post copy of <i>Environment Act</i> permit and Solid Waste Management Plan 	Quarterly or as required
Used tire storage area (truck shop)	<ul style="list-style-type: none"> • Ensure tires are stored properly and sorted via size (under 24.5 inch diameter versus over 24.5 inch diameter) 	Quarterly or as required
Hazardous Material & Special waste storage areas	<ul style="list-style-type: none"> • Display of Material Safety Data Sheets • Inspection of proper segregation, storage and containment of all hazardous materials and special wastes • Ensure sign outside facility includes required information including wastes allowed in facility, spill response reporting phone numbers, etc. • Post copy of <i>Environment Act</i> permit and Solid Waste & Hazardous Materials Management Plan 	Weekly or as required

5.2 RECORDS

Table 5-2 provides a list of records that will be kept as part of the solid waste management plan. Records will be kept on site for a minimum of three years and will be made available upon request.

Table 5-2: Record Keeping

Area	Requirement	Frequency
All inspections	<ul style="list-style-type: none"> • Include name, date, observations, actions taken, date of action 	Each inspection
Land fill area	<ul style="list-style-type: none"> • Log of materials disposed of at landfill including: <ul style="list-style-type: none"> ○ Date ○ Individual transferring waste to landfill ○ Waste type ○ Quantity/volume ○ Cell • Locations of all active and closed cells 	As required when wastes are disposed of and when cells are activated or closed
Incinerator	<ul style="list-style-type: none"> • Pre-operation checklist • Daily log • Stack tests 	As required per use As required per use Quarterly
Open burning area	<ul style="list-style-type: none"> • Open burning log including date, personnel completing burn, type and volume of material burned 	As required per use
Waste oil burner	<ul style="list-style-type: none"> • Waste oil burner inspection log • Waste oil feedstock sampling and analysis (as requested by Client Services and Inspections) 	Monthly or each inspection

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Solid Waste and Hazardous Materials Management Plan

Section 5 Inspections and Record Keeping

Area	Requirement	Frequency
Spills and leaks	<ul style="list-style-type: none">• Spill report:<ul style="list-style-type: none">○ Date of spill or observation○ Location and distance to nearest watercourse○ Substance○ Estimated quantity○ Clean up procedures○ Notifications	As required
Land treatment facility	<ul style="list-style-type: none">• Land treatment facility inspection log• Land treatment soil testing results	Quarterly or each inspection
Used tire storage area (truck shop)	<ul style="list-style-type: none">• Total number of used tires disposed of on-site and locations• Total number of used tires disposed of off-site	Quarterly or as required
Special waste management areas	<ul style="list-style-type: none">• Inventory of special wastes received, stored, used and disposed of• Details of disposal of all special wastes• Records of collection from hazardous waste collection services	Monthly or as required
Hazardous Materials	<ul style="list-style-type: none">• Up to date MSDS for all hazardous materials• Delivery manifests for all hazardous materials including date, type, quantity, transporter, etc.• Inventory of hazardous materials• Training certification for all personnel involved with transportation, handling, storage and use of hazardous materials	Monthly or as required

APPENDIX A
Waste Management Permit

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Permit No: 81-064

WASTE MANAGEMENT PERMIT

Issued Pursuant to the *Environment Act*,
the *Air Emissions Regulations*, the *Solid Waste Regulations*,
and the *Special Waste Regulations*

Permittee: StrataGold Corporation

Mailing Address: 910-1050 West Pender Street, Vancouver, BC V6E 3S7

Site Location: Haggart Creek Road, Mayo
64°2'13.409"N 135°44'32.616"W

Authorized Representative: Hugh Coyle, Lands & Permitting Manager
Phone/Fax: (604) 696-6600 / (604) 682-5232
Email: hcoyle@vitgoldcorp.com

Effective Date: January 1, 2017
Expiry Date: December 31, 2021

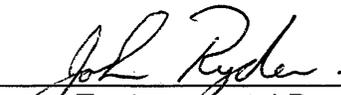
This permit replaces permit #81-064 issued on December 19th, 2013.

Scope of Authorization: In accordance with your application, **Victoria Gold Corporation**, represented by yourself, is authorized to:

- a. operate a dump for the disposal of solid waste generated by the commercial activities of the permittee;
- b. generate or store: **waste oil, waste antifreeze, waste solvents and waste fuels;** and
- c. operate equipment for the incineration of: **waste oil**

at the above site location ("the site") as set out in the terms and conditions of this permit.

Dated this 29th day of December, 2016



Director, Environmental Programs Branch
Environment Yukon

DEPARTMENT OF ENVIRONMENT
ENVIRONMENTAL PROGRAMS
Whitehorse, Yukon
Certified true copy of original
Date: 29 Dec 16 Initials: JCM

1. DEFINITIONS

1. In this permit,

“Act” means the *Environment Act*, R.S.Y. 2002, c. 76;

“approved plan” means a plan that is submitted by the permittee and approved by an environmental protection analyst under this permit and includes any terms and conditions specified by the environmental protection analyst in the approval;

“associated personnel” means all employees, contractors and volunteers involved in the permitted activities;

“Branch” means the Environmental Programs Branch, Environment Yukon;

“contaminated material” means any soil, snow, sediment, or water that has one or more parameters in excess of applicable standards in the *Contaminated Sites Regulation*, O.I.C. 2002/171;

“dangerous wildlife” means wildlife so defined in the *Wildlife Act*, R.S.Y. 2002, c. 229;

“environmental protection analyst” means an employee of the Branch so designated by the Minister of Environment under the Act;

“environmental protection officer” means an employee of the Government of Yukon so designated by the Minister of Environment under the Act;

“putrescible waste” means food or plant-based waste which can decompose or rot;

“Regulations” means any or all of the *Air Emissions Regulations*, O.I.C. 1998/207, the *Solid Waste Regulations*, O.I.C. 2000/11, the *Contaminated Sites Regulation*, O.I.C. 2002/171, the *Designated Materials Regulation*, O.I.C. 2003/184, the *Storage Tank Regulations*, O.I.C. 1996/194, the *Spills Regulations*, O.I.C. 1996/193, and the *Special Waste Regulations*, O.I.C. 1995/047, as applicable;

“solid waste” includes waste which originates from residential, commercial, industrial or institutional sources, or from the demolition or construction of buildings or other structures or which is specified in a solid waste management plan to be solid waste and for greater certainty includes litter, as defined in the *Act*, but does not include untreated brush or wood products that are not mixed with other materials;

“special waste management facility” means an operation which handles or disposes special wastes generated by other persons or operations, and includes without limitation a community collection system which is intended to collect or transport special waste to a special waste management facility in the Yukon;

“spill” means a release of a substance in excess of the amounts specified in Schedule A of the *Spills Regulations*, O.I.C. 1996/193, or that is abnormal in quantity or quality in light of all the circumstances of the release;

“storage tank” means a closed container with a capacity of more than 230 litres that is designed to be installed in a fixed location, and includes either an aboveground storage tank or an underground storage tank;

“substance” means a hazardous substance, pesticide, contaminant, or special waste.

“vehicle” has the same meaning as in the *Motor Vehicles Act*, R.S.Y. 2002, c. 153; and “waste manifest” means the shipping document required to be completed by the permittee as set out in this permit in the form approved by an environmental protection officer.

2. Any term not defined in this permit that is defined in the Act or the Regulations has the same meaning as in the Act or the Regulations.

2. GENERAL

1. No condition of this permit limits the applicability of any other law or bylaw.
2. The permittee shall ensure that all activities authorized by this permit occur on property that the permittee has the right to enter upon and use for that purpose.
3. The permittee shall ensure that all associated personnel:
 - a) have access to a copy of this permit;
 - b) are knowledgeable of the terms and conditions of this permit; and
 - c) receive the appropriate training for the purposes of carrying out the requirements of this permit.
4. The permittee shall provide notice in writing to an environmental protection analyst prior to any significant change of circumstances at the site, including without limitation:
 - a) closure of the operation or site;
 - b) change of ownership of the site;
 - c) discontinuation of any regulated activity at the site;
 - d) generating, storing or transporting special wastes other than those authorized by this permit; or
 - e) change to the mailing address or phone number of the permittee.
5. Where conflicts exist between this permit, the permit application or elements of any plan pertaining to any activity regulated under the Act, this permit shall prevail.
6. If an inspection reveals that the site or equipment is in any way not in compliance with this permit or approved plans developed in accordance with this permit, the permittee shall repair the damage or take other actions as required to bring the site or equipment into compliance.
7. For clarity, all obligations of the permittee under this permit survive the expiry date.

3. PLANS AND REPORTS

1. When the permittee is required to submit a plan under this permit, the permittee shall:
 - a) ensure the plan meets the requirements for that type of plan as established by the Branch in writing, where applicable;
 - b) submit the plan in writing to an environmental protection analyst; and

- c) implement the plan as of the date it is submitted, unless otherwise provided for in this permit.
2. If the permittee wants to amend a submitted plan, the permittee shall submit the proposed amendment to an environmental protection analyst as if the amendment were a plan under section 3.1 of this permit.
3. If an environmental protection analyst directs in writing that a submitted plan be amended, the permittee must prepare the required amendment by the date specified and submit it as if it were a plan referred to in section 3.1 of this permit.

4. FENCING AND SECURITY

1. The permittee shall install and maintain, in accordance with the manufacturer's operating and maintenance instructions and recommendations, an electric exclusion fence(s) and gates that encompass all putrescible waste storage and disposal areas at the dump and any other areas of the site that become or may become an attractant to animals. The fence and gates shall be adequate to prevent dangerous wildlife from entering the encompassed areas of the site.
2. The fences and gates referenced in paragraph 4.1 above must be:
 - a) activated continuously from May 1 to October 31 of each year;
 - b) activated between November 1 and April 30 of each year if there are tracks or other signs of dangerous wildlife attempting to access the dump; and
 - c) activated upon the written request of an environmental protection officer.
3. If the permittee wishes to deactivate the electric fence for any length of time during the period of operation referenced in paragraph 4.2 (other than for regular maintenance of the fence), the permittee shall obtain prior approval from an environmental protection officer.
4. The permittee shall conduct weekly inspections of all electric fences and shall maintain them as necessary during periods of activation as specified in paragraph 4.2 to ensure that:
 - a) the fence is sufficiently charged to deter wildlife; and
 - b) there is no vegetation or windblown litter or other items along the perimeter of the fence, or contacting the fence, that may act as a ground.
5. The permittee shall ensure that all gates are closed and secured every time personnel leave the area bounded by the electric fence.
6. The permittee shall install and maintain fencing or other comparable measures to prevent the release of solid waste from the dump.

5. STORAGE AND OFF-SITE TRANSFER OF SOLID WASTE

1. The permittee shall ensure that putrescible waste is stored in bear-proof containers and that it is not stored for a period of greater than seven days prior to being transferred offsite in accordance with this permit.
2. The permittee shall ensure that all ash from incinerating or open burning is placed in a covered metal container and transported to a permitted solid waste disposal facility.
3. The permittee shall ensure that all materials listed in Schedule A of the *Designated Materials Regulation*, O.I.C. 2003/184, are not buried or burned and that they are taken periodically to a municipal or community dump or other depot for those materials.
4. The permittee shall ensure that they receive written authorization from the operator of any municipal or Yukon government solid waste disposal facility prior to transferring any waste to that facility.
5. The permittee shall report any incidents involving dangerous wildlife to the Government of Yukon, Conservation Officer Services Branch (867-390-2685) or the TIPP line (1-800-661-0525).

6. STORAGE AND HANDLING OF SPECIAL WASTE

1. The permittee shall not handle special wastes other than those authorized by this permit.
2. The permittee shall not discard, destroy, treat, process, incinerate, or recycle special wastes unless specifically authorized by this permit, except for mixing or dilution authorized by an environmental protection officer as an acceptable treatment or disposal option for the special waste.
3. The permittee shall ensure that each container containing special waste is clearly labelled to indicate the type of special waste stored. The permittee shall not mix different types of special waste.
4. The permittee shall ensure that special wastes are stored and handled in such a manner as to prevent their release into the environment.
5. The permittee shall ensure that:
 - a. all drums and other portable containers containing special wastes are covered or stored out of inclement weather;
 - b. all drums and other portable containers containing special wastes are stored off the ground;
 - c. all containers used to store special waste are closed at all times during storage;
 - d. special wastes are stored in a manner that will prevent incompatible substances from reacting adversely with each other;

- e. containers used for the storage of special waste are made of materials that will not adversely react with the special waste;
 - f. special wastes stored in leaking containers are immediately transferred to intact containers; and
 - g. all containers used for the storage of special waste are clearly marked to identify what special waste is stored in the container.
6. The permittee shall inspect special waste storage containers:
 - a) weekly in terms of visual inspections for leaks;
 - b) monthly in terms of the volume of special wastes stored on site;
 - c) annually in terms of tank/container quality, piping, and auxiliary equipment; and
 - d) upon request from an environmental protection officer.
 7. The permittee shall not allow any residue at the bottom of a container used for the storage of special waste to be released to the environment. Such residue shall be collected by the permittee and considered to be special waste until proven by testing to not be special waste.
 8. The permittee shall not store special wastes that are petroleum products in a storage tank with a capacity greater than 4000L unless specifically authorized by a permit issued pursuant to the *Storage Tank Regulations*, O.I.C. 1996/194.
 9. The permittee shall not store special wastes that are not petroleum products in a storage tank with a capacity of 2000L or greater unless specifically authorized by a permit issued pursuant to the *Storage Tank Regulations*, O.I.C. 1996/194.
 10. If an inspection reveals that the amount of special waste stored at the site may pose a risk to human health or the environment, the permittee shall develop and implement a final disposal plan for the special waste, as directed in writing by an environmental protection officer.

7. WASTE OIL

1. Waste oil in which one or more contaminants exceeds the standards specified in Table 1 below shall be considered contaminated waste oil.

TABLE 1: ACCEPTABLE ANALYSIS METHODS AND CONTAMINANT LEVELS IN WASTE OIL

Contaminant	Maximum Concentration (mg/kg)	Test Method
Arsenic	5.0	EPA 3050B/3051 & 7060
Cadmium	2.0	EPA 3050B/3052 & 7000/7131
Chromium	10	EPA 3050B/3051 & 7000/7191
Lead	50	EPA 3050B/3051 & 7000/7421
Total organic halogens	1000	EPA 9020B or EPA 9022
PCBs	2.0	EPA 3540C/3541 & 8082

2. Determination as to whether waste oil is contaminated shall be made in accordance with the "General Information on Waste Oil" guidelines established by the Branch, as amended from time to time.
3. Prior to blending contaminated waste oil with uncontaminated waste oil, the permittee shall obtain analytical results for both the contaminated and uncontaminated oil and blend the oil in accordance with the "General Information on Waste Oil" guidelines established by the Branch, as amended from time to time.
4. When submitting a sample of waste oil feedstock for laboratory analysis the permittee shall ensure that the laboratory uses the methods specified in Table 1, or equivalent, as amended from time to time, for each listed substance. The permittee shall ensure that the detection limit of the method used is lower than the standards set forth in Table 1.
5. The permittee shall not incinerate contaminated waste oil.
6. Waste oil shall only be incinerated in an appliance which is approved or certified to burn waste oil by the Canadian Standards Association (CSA), the Underwriters' Laboratories (UL), or the Underwriters' Laboratories of Canada (ULC).
7. The waste oil incinerator must be installed, operated and maintained in accordance with the manufacturer's written instructions and specifications.
8. The permittee shall have a sample of their waste oil feedstock analyzed as directed by an environmental protection officer, and shall allow an environmental protection officer to obtain samples of their waste oil feedstock for the purpose of submitting them for analysis.
9. No special wastes other than waste oil may be incinerated under this permit without undertaking an environmental assessment pursuant to the *Yukon Environmental and Socio-economic Assessment Act*.

8. TRANSPORT AND TRANSFER OF SPECIAL WASTE

1. The permittee shall not transport or transfer special wastes other than within the site.
2. The permittee shall ensure that all special wastes are transported and transferred in such a manner as to prevent their release into the environment.
3. The permittee shall complete a waste manifest documenting each shipment of special wastes from the site. The permittee shall distribute copies of the waste manifest in the manner described thereon.
4. The permit number **YG81-064** shall be used as the Provincial Identification Number on waste manifests used for the transport of the listed special wastes.

5. The permittee shall ensure that all vehicles operated by the permittee and carrying any special wastes are secured to prevent access by unauthorized persons.
6. The permittee shall ensure that special wastes are transported to a special waste management facility in the Yukon or another jurisdiction that is permitted to receive those listed special wastes.
7. The permittee shall ensure that special wastes are transported by a carrier permitted in the Yukon to transport the listed special wastes.

9. SPILLS

1. The permittee shall contact either an environmental protection officer, or the 24-hour Yukon Spill Report Centre (**867-667-7244**) as soon as possible under the circumstances in the event of a release, spill, unauthorized emission, discharge, or escape of any substance listed in the *Spills Regulations*, O.I.C. 1996/193, or any special wastes.
2. The permittee shall ensure that clean-up equipment appropriate for the amount and type of special waste generated or stored on site (such as sorbent, shovel, broom, bucket, gloves, boots, etc.) is readily accessible at all locations where the special wastes are handled or stored.
3. The permittee shall ensure that spill procedures are developed, maintained, and posted at all locations where special wastes are handled or stored, and that all personnel (employees, contractors or volunteers) are familiar with those procedures. The spill procedures must meet the requirements for that type of plan as established by the Branch in writing.
4. The permittee shall ensure that contaminated material resulting from a release, spill, unauthorized emission, discharge, or escape or any special wastes is properly handled in accordance with the *Contaminated Sites Regulation*, O.I.C. 2002/171.

10. INSPECTIONS AND RECORD KEEPING

1. The permittee shall keep the following general records at the site:
 - a) a current site plan showing the location of the solid and special waste storage and handling locations;
 - b) a copy of each plan developed under this permit, and any amendments to and approvals of each plan;
 - c) inspections conducted by the permittee in accordance with this permit (including the name of the person conducting the inspection, the date of each inspection, any observations recorded during the inspection, actions taken as a result of those observations, and the date each action was taken); and
 - d) any and all deficiencies remedied in accordance with paragraph 2.6, and how and when they were remedied.

2. The permittee shall keep the following records at the site related to the offsite transfer of solid waste:
 - a) written authorization from the operator of any municipal or Yukon government solid waste disposal facility authorizing the transfer of waste to that facility.

3. The permittee shall keep the following records at the site related to the storage and handling of special waste:
 - a) the types of special wastes generated or stored at the site, their estimated volumes, and their storage location(s);
 - b) a copy of any waste manifests used to transport special wastes to or from the site; and
 - c) notes concerning any release, spill, unauthorized emission, discharge, or escape that occurred at the site, including the substance involved and estimated quantity, the date of observation, any spill reports made, and clean-up procedures implemented.

4. The permittee shall keep all records required under this permit in a format acceptable to an environmental protection officer for a minimum of three years and make them available for inspection by an environmental protection officer upon request.

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APPENDIX B

Incinerator and Open Burning Log

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APPENDIX C
Hazardous Materials Management
Practices

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1 BEST MANAGEMENT PRACTICE - ANTIFREEZE

Chemical name/class:	Ethylene Glycol	CAS #:	67-56-1
Designated Work Area:	Truck shop / ADR facility for heat recovery		

Antifreeze is generally made of either ethylene glycol or propylene glycol and used to lower the freezing point of mining machinery coolant and can be used in heat recovery from diesel generators, as a closed loop circuit, which can be used to heat mine shops, and buildings.

- Handle, store and dispose of antifreeze in accordance with the supplier MSDS.
- Store unused antifreeze in the supplier's containers within secondary containment structures. Antifreeze will be stored in the truck shop store, and at the ADR facility in a holding tank, as part of the heat recovery circuit.
- Antifreeze purchase, storage and use will be recorded for database and cost control purposes. This information will also be used for reconciling any spills or leaks if such events occur.
- The disposal of used/spilled antifreeze will be undertaken by placing it in bulk tanks / drums, and transporting it to Yukon depots accepting used antifreeze. The transportation will be conducted either by SGC or by a third-party service provider in conformance with TDGA requirements.
- Antifreeze packaging or containers will not be used for any other purpose; the containers will either be returned to the supplier or disposed of as hazardous / special waste in a permitted third party hazardous / special waste disposal facility or landfill.
- All spills will be reported to the SGC Environmental Coordinator.
- The Yukon Spill Report Centre must be contacted at **(867) 667-7244** if the spill exceeds the reporting thresholds presented in the Spill Response Plan.
- Spill cleanup will be undertaken as indicated in the supplier MSDS.
- Spilled material will be regarded as hazardous / special waste and will be disposed of in a permitted third party hazardous waste landfill or disposal facility.

2 BEST MANAGEMENT PRACTICE - LEACHING CIRCUIT ANTISCALANT

Chemical name/class:	Millsperse	CAS #:	26099-09-2
Designated Work Area:		Heap leach facility / solution management	

This product is used in the leaching circuit to prevent the heap leach cyanide distribution system from clogging which would reduce the efficiency of the heap leach process.

- Handle, store and dispose of the leaching circuit antiscalant in accordance with the supplier MSDS.
- This product is used in the leaching circuit to prevent the heap leach cyanide distribution system from clogging which would reduce the efficiency of the heap leach process.
- Store unused antiscalant in the supplier's containers within secondary containment structures. The antiscalant will be stored in the ADR facility within areas with secondary containment foundations.
- Antiscalant purchase, storage and use will be recorded for database and cost control purposes. This information will also be used for reconciling any spills or leaks if such events occur.
- SGC does not anticipate the production of waste leaching circuit antiscalant. Should a circumstance arise whereby unused leaching circuit is required to be transported offsite for disposal then the disposal will be carried out through procedures described in the MSDS and supplier advice. The transportation offsite will be carried out either by SGC or by service provider in conformance with TDGA requirements.
- Antiscalant packaging or containers will not be used for any other purpose, the containers will either be returned to the supplier or disposed of as hazardous / special waste in a permitted third party hazardous / special waste disposal facility or landfill.
- All spills will be reported to the SGC Environmental Coordinator.
- The Yukon Spill Report Centre must be contacted at **(867) 667-7244** if the spill exceeds the reporting thresholds presented in the Spill Response Plan.
- Spill cleanup will be undertaken as indicated in the supplier MSDS.
- Spilled leaching circuit antiscalant will be placed in the heap leach so that spilled material will be consumed within the heap leach solution.

3 BEST MANAGEMENT PRACTICE - STRIPPING CIRCUIT ANTISCALANT

Chemical name/class:	Ethylenediaminetetraacetic Acid Tetrasodium Salt	CAS #:	10378-23-1
Designated Work Area:	Stripping circuit solution management		

This antiscalant used in the stripping circuit is a chemical called Ethylenediaminetetraacetic Acid Tetrasodium Salt (EDTA). EDTA is a persistent organic pollutant because it degrades to ethylenediaminetriacetic acid, which then cyclizes to the diketopiperizide, a cumulative, persistent, organic environmental pollutant.

- Handle, store and dispose of the stripping circuit antiscalant in accordance with the supplier MSDS.
- Store unused antiscalant in the supplier's containers within secondary containment structures. The antiscalant will be stored in the ADR facility within areas with secondary containment structures/ foundations.
- Antiscalant purchase, storage and use will be recorded for database and cost control purposes. This information will also be used for reconciling any spills or leaks if such events occur.
- SGC does not anticipate the production of waste stripping circuit antiscalant. Should a circumstance arise whereby unused stripping circuit is required to be transported offsite for disposal then the disposal will be carried out using procedures described in the MSDS and supplier advice. The transportation offsite will be conducted either by SGC or by service provider in conformance with TDGA requirements.
- Antiscalant packaging or containers will not be used for any other purpose, the containers will either be returned to the supplier or disposed of as hazardous / special waste in a permitted third party hazardous / special waste disposal facility or landfill.
- All spills will be reported to the SGC Environmental Coordinator.
- The Yukon Spill Report Centre must be contacted at **(867) 667-7244** if the spill exceeds the reporting thresholds presented in the Spill Response Plan.
- Spill cleanup will be undertaken as indicated in the supplier MSDS.
- Spilled stripping circuit antiscalant will be disposed of by mixing into the ADR facility solution if possible so that spilled material will be used up within the ADR facility solution. If this is not possible then the spilled material and contaminated soil, water or snow will be stored in suitable containers prior to transport offsite to a permitted third party hazardous / special waste disposal facility or landfill.

4 BEST MANAGEMENT PRACTICE - LEAD ACID BATTERIES

Chemical name/class:	Liquid sulphuric acid and heavy metals	CAS #:	N/A
Designated Work Area:	Truck shop		

SGC will ensure that personnel handle, store, dispose of batteries with care, and are handled upright such that the contents of the battery cells do not leak. SGC will store unused batteries in a clean dry area in the truck shop store.

Waste vehicle batteries will be collected for regular shipment to a permitted recycle or disposal facility. Used-lead acid batteries will be temporarily stored within the truck shop in a designated dry, secure area prior to shipment off site to a battery supplier or other institution capable of safely disposing of the batteries.

Battery purchase, storage and use will be recorded for database and cost control purposes. This information will also be used for reconciling any stock losses or missing stock. SGC will generate and maintain a register of batteries inserted into each mine vehicle.

Batteries will be purchased specifically for the type of vehicle and properly installed. This will enhance the battery life.

The steps outlined below for storing batteries will be followed to help prevent acid leaks and spills and to avoid contamination of the storage site:

- Batteries will be placed on wooden pallets in secondary containment (i.e., on a liner or berm) to prevent the escape of acid,
- Before putting waste batteries on the pallet, plastic sheeting will be placed on it to completely enclose all of the batteries in a continuous sheet of plastic. All sides will be wrapped to protect the batteries from the weather and to prevent any acid from being discharged into the environment,
- Batteries will not be stacked more than three layers thick and each layer will be separated with a sheet of plywood or other suitable material.

The transportation offsite of old batteries will be carried out either by SGC or by service provider in conformance with TDGA requirements.

All spills will be reported to the SGC Environmental Coordinator.

The Yukon Spill Report Centre must be contacted at **(867) 667-7244** if the spill exceeds the reporting thresholds presented in the Spill Response Plan.

Spill cleanup will be undertaken as per the MSDS for sulphuric acid. Spill material collected will be stored in hazardous waste containers or bins for disposal for transportation offsite to a permitted third party hazardous / special waste disposal facility or landfill.

5 BEST MANAGEMENT PRACTICE - BIOMEDICAL WASTE

Chemical name/class:	Sharps, needles, swabs, human blood / body fluid / tissue, empty medicine bottles, used bandages, gloves	CAS #:	N/A
Designated Work Area:	Site medical facility		

SGC will equip the camp medical facility with necessary containers/bins for storage and disposal of biomedical waste. These containers are commercially available and are designed to prevent use for storage of other wastes or for accidental leakage or the contents. These containers will be color coded and stored in a locked facility only accessible by trained medical personnel. Potential color-coding of the containers will be as follows:

- Human anatomical waste – Red
- Animal waste– Orange
- Microbiology and lab waste– Yellow
- Human blood and body fluid– Yellow
- Waste sharps– Yellow

Waste sharps will be transported offsite for disposal by an approved third party facility accepting or handling medical waste. Such facilities include hospitals and government clinics. The transportation of these wastes will be provided either by SGC or by service provider in conformance with TDGA requirements. Other biomedical wastes will be incinerated.

6 BEST MANAGEMENT PRACTICE - CEMENT

Chemical name/class:	Cement	CAS #:	65997-15-1
Designated Work Area:	Heap leach facility		

Cement will be used during construction, for concrete manufacturing and during operations for heap leach stabilization.

- Handle, store and dispose of the cement in accordance with the supplier MSDS.
- Cement purchase, storage and use will be recorded for database and cost control purposes. This information will also be used for reconciling any unexpected losses.
- Cement will be supplied in bulk road transportation trucks, with mechanical off-loading equipment. The Cement will be stored in purpose built silos to keep the cement dry and facilitate distribution during the process via automated systems.
- All spills of uncured concrete into watercourses will be reported to the SGC Environmental Coordinator.
- The Yukon Spill Report Centre must be contacted at **(867) 667-7244** if the spill exceeds the reporting thresholds presented in the Spill Response Plan.
- Spill cleanup will be undertaken as per the MSDS for cement.

7 BEST MANAGEMENT PRACTICE - DEGREASING FLUID

Chemical name/class:	Ethoxylated C12-15 alcohol Potassium Hydroxide Alcohol C9-11, ethoxylated Alkyl dimethyl benzyl ammonium chloride Ethyl alcohol Sodium metasilicate, pentahydrate	CAS #:	68131-39-5 1310-58-3 68439-46-3 68424-85-1 64-17-5 10213-79-3
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Designated Work Area:

Truck shop

Degreasing fluid will be used in the truck shop for washing of mechanical parts during maintenance and repairs. Degreasing fluid will be stored in supplier containers in the truck shop store, behind locked doors. The degreaser will be handled through use of a degreasing table or degreasing tank, with an inbuilt tray for recycling and collection of degreasing fluid.

- Handle, store and dispose of the degreasing fluid in accordance with the supplier MSDS.
- Degreasing fluid packaging or containers will not be used for any other purpose. The containers will either be returned to the supplier or disposed of as hazardous / special waste in a permitted third party hazardous / special waste disposal facility or landfill.
- Degreaser purchase, storage and use will be recorded for database and cost control purposes. This information will also be used for reconciling any stock losses or missing stock.
- All spills will be reported to the SGC Environmental Coordinator.
- The Yukon Spill Report Centre must be contacted at **(867) 667-7244** if the spill exceeds the reporting thresholds presented in the Spill Response Plan.
- Spill cleanup will be undertaken as per the MSDS for degreasing fluid.

8 BEST MANAGEMENT PRACTICE - DIESEL

Chemical name/class:	Diesel	CAS #:	64742-81-0
Designated Work Area:		Camp and ADR facility	

Diesel will be used as fuel for mining machinery and various diesel engine powered equipment, such as generators, mobile welding, diesel powered boilers and diesel powered pumps.

- SGC will ensure that personnel handle, store and dispose of waste diesel in accordance with the supplier MSDS.
- SGC will construct a fuel storage facility, which will include diesel storage tanks and a secondary containment foundation with curbed sides to contain 110% of the volume of the largest tank within the facility. Diesel will be stored in certified tanks, which will be subject to weekly inspections. The diesel storage facility will be equipped with firefighting and spill cleanup equipment.
- Diesel will be pumped into vehicles and equipment directly where possible and via a dedicated diesel transport vehicle for machinery that is too large, too slow, semi-stationary or stationary for direct filling at the diesel storage facility. The purpose built diesel transport vehicle will be equipped with spill kits and firefighting equipment. The vehicle will be subject to inspection at shift change by the operators and weekly inspection by environmental, health and safety personnel. Records of diesel storage and use will be maintained, and every transaction will be recorded.
- With the implementation of diligent fuel management practices, SGC anticipates that minimal quantities of waste diesel will be generated. Minor diesel spills that may occur during machinery maintenance will be collected in drip trays, temporarily stored at the truck shop in a suitable HDPE container and periodically transferred into the used oil storage tank for use as fuel for the solution-heating boiler.
- All spills will be reported to the SGC Environmental Coordinator.
- The Yukon Spill Report Centre must be contacted at **(867) 667-7244** if the spill exceeds the reporting thresholds presented in the Spill Response Plan.
- Spill cleanup will be undertaken as per the MSDS for diesel. Contaminated soil, water or snow will be stored and remediated in the land treatment facility.

9 BEST MANAGEMENT PRACTICE - EXPLOSIVES

Chemical name/class:	CAS #:
Designated Work Area:	

Explosives will be handled, stored and used in accordance with the Explosives Management Plan.

- Procure explosives from a certified explosives supplier / contractor.
- All spills will be reported to the SGC Environmental Coordinator.
- The Yukon Spill Report Centre must be contacted at **(867) 667-7244** if the spill exceeds the reporting thresholds presented in the Spill Response Plan.
- Spill cleanup and disposal of spilled material will be undertaken as per the Explosives Management Plan.

10 BEST MANAGEMENT PRACTICE - GASOLINE

Chemical name/class:	Gasoline/ petrol	CAS #:	86290-81-5
Designated Work Area:		Fuel storage and site wide	

- Handle, store and dispose of the gasoline in accordance with the supplier MSDS.
- Fuel storage facility to include:
 - secondary containment foundations with curbed sides to contain 110% of the volume of the largest tank within the facility.
 - certified tanks, which will be subject to regular inspections.
 - firefighting and spill cleanup equipment.
- Gasoline will be pumped into vehicles and equipment directly where possible. Records of gasoline storage and use will be maintained, and every transaction will be recorded.
- With the implementation of diligent fuel management practices, SGC anticipates that minimal quantities of waste gasoline will be generated. Minor gasoline spills that may occur during machinery maintenance will be collected in drip trays, temporarily stored at the truck shop in a suitable HDPE container and periodically transferred into the used oil storage tank for use as fuel for the solution-heating boiler.
- If large quantities of gasoline require disposal, this will be executed by containment within tanks/drums and transportation offsite to a permitted third party facility accepting hazardous/ special waste.
- All spills will be reported to the SGC Environmental Coordinator.
- The Yukon Spill Report Centre must be contacted at **(867) 667-7244** if the spill exceeds the reporting thresholds presented in the Spill Response Plan.
- Spill cleanup will be undertaken as per the MSDS for gasoline. Contaminated soil, water or snow will be stored in the land treatment facility.

11 BEST MANAGEMENT PRACTICE - GEAR OIL AND LUBRICANTS (OIL)

Chemical name/class:	Engine oil (15W40) Grease Hydraulic oil Differential oil Automatic transmission fluid Brake fluid 2 stroke oil	CAS #:	490-243
Designated Work Area:		Truck shop	

SGC will use gear oil and lubricants for various applications as required by mining machinery lubrication or power transmission requirements. The oils and lubricants will be stored in drums/containers in the truck shop store. Drums being used will be placed on support frames over a spill tray/pallet. Oil in containers will be decanted using a funnel to prevent spillage.

- Handle, store and dispose of gear oil and lubricants in accordance with the supplier MSDS.
- During oil changes or machinery maintenance, oil will be collected in purposefully designed trays/ oil collection tanks, for decanting into an old oil storage tank or bowser. Old oil will be transferred into the used oil storage tank for use as fuel for the solution-heating boiler.
- Waste oil from the mining equipment will be stored at the ADR facility in a 10,000-litre tank for use as fuel for the solution-heating boiler. SGC will ensure compliance with the Environment Yukon guideline titled Guide for Used Oil Burner Operators and will obtain appropriate Environment Yukon permits for the storage of waste oils in the oil storage tank and the incineration of oil in the solution-heating boiler.
- All spills will be reported to the SGC Environmental Coordinator.
- The Yukon Spill Report Centre must be contacted at **(867) 667-7244** if the spill exceeds the reporting thresholds presented in the Spill Response Plan.
- Spill cleanup will be undertaken as per the MSDS for oil. Oil contaminated soil, water or snow will be stored and remediated in the land treatment facility.

12 BEST MANAGEMENT PRACTICE - HYDROCHLORIC ACID

Chemical name/class:	HCl	CAS #:	7647-01-0
Designated Work Area:	ADR Facility		

Hydrochloric acid is used in the stripping circuit in the ADR facility. Approximately 450 litres will be used per day. HCL will be stored in supplier drums/ containers within a secondary containment foundation of concrete with curbed sides with epoxy lining. Spill kits and personal protective equipment will be provided at the areas where HCl is stored and handled. Storage of HCl will be undertaken to prevent accidental interactions with Sodium Cyanide and Sodium Hydroxide in the leaching circuit. This will be carried out by constructing separate storage facilities and separate drainage for these facilities.

- Handle, store and dispose of the HCl in accordance with the supplier MSDS.
- All installations and equipment will be designed and approved by a professional engineer with experience in handling of hydrochloric acid.
- The handling of HCl will be carried out mechanically to minimize manual handling through lifting and transportation equipment and decanting facilities. Only authorized personnel who have completed training and certification will be allowed to handle HCl.
- Hydrochloric acid purchase, storage and use will be recorded for database and cost control purposes. This information will also be used for reconciling any unexpected losses.
- No waste HCl is expected, in the case of a spill, spill cleanup sorbent materials resulting will be handled as per the Spill Response Plan, and disposed of as hazardous/ special waste offsite.
- HCl packaging or containers will not be used for any other purpose, the containers will either be returned to the supplier or disposed of as hazardous / special waste in a permitted third party hazardous / special waste disposal facility or landfill.
- All spills will be reported to the SGC Environmental Coordinator.
- The Yukon Spill Report Centre must be contacted at **(867) 667-7244** if the spill exceeds the reporting thresholds presented in the Spill Response Plan.
- Spill cleanup will be undertaken as per the MSDS for HCl. Spill kit sorbent materials, soil or snow used to contain a hydrochloric acid spill will be placed in hazardous / special waste bins for transportation offsite to a permitted third party facility or landfill accepting hazardous / special waste.

13 BEST MANAGEMENT PRACTICE - HYDROGEN PEROXIDE

Chemical name/class:	Hydrogen peroxide (H₂O₂)	CAS #:	7722-84-1
Designated Work Area:	Cyanide detoxification (ADR facility and Water treatment plant)		

Hydrogen Peroxide solution will be used for Cyanide detoxification. Hydrogen peroxide will be stored in supplier drums/ containers within a secondary containment foundation of concrete with curbed sides. Spill kits and personal protective equipment will be provided at the areas where Hydrogen Peroxide is stored and handled.

- Handle, store and dispose of the Hydrogen Peroxide in accordance with the supplier MSDS.
- All installations and equipment will be designed and approved by a professional engineer with experience in handling of hydrogen peroxide.
- The handling of Hydrogen Peroxide will be carried out mechanically to minimize manual handling through lifting and transportation equipment and decanting facilities. Only authorized personnel who have completed training and certification will be allowed to handle Hydrogen Peroxide.
- Hydrogen Peroxide purchase, storage and use will be recorded for database and cost control purposes. This information will also be used for reconciling any unexpected losses.
- No waste Hydrogen Peroxide is expected, in the case of a spill, spill cleanup sorbent materials used for product recovery will be handled as per the Spill Response Plan, and disposed of as hazardous/ special waste offsite.
- Hydrogen Peroxide packaging or containers will not be used for any other purpose, the containers will either be returned to the supplier or disposed of as hazardous / special waste in a permitted third party hazardous / special waste disposal facility or landfill.
- All spills will be reported to the SGC Environmental Coordinator.
- The Yukon Spill Report Centre must be contacted at **(867) 667-7244** if the spill exceeds the reporting thresholds presented in the Spill Response Plan.
- Spill cleanup will be undertaken as per the MSDS for Hydrogen Peroxide. Spill kit sorbent materials, soil or snow used to contain a Hydrogen Peroxide spill will be placed in hazardous / special waste bins for transportation offsite to a permitted third party facility or landfill accepting hazardous / special waste.

14 BEST MANAGEMENT PRACTICE - LIME

Chemical name/class:	Calcium Hydroxide (lime)	CAS #:	1305-62-0
Designated Work Area:	Heap leach facility		

Lime will be used during operations for heap leach stabilization and pH regulation. Approximately 24 tonnes of lime will be used per day during operations.

- Handle, store and dispose of lime safely and in accordance with manufacturer's specifications and the MSDS.
- Lime purchase, storage and use will be recorded for database and cost control purposes. This information will also be used for reconciling any unexpected losses.
- Lime will be supplied to SGC Eagle Gold project site in bulk trucks, with mechanical off-loading equipment. The lime will be stored in purpose built silos to keep the lime dry and facilitate distribution during the process via automated systems.
- All spills will be reported to the SGC Environmental Coordinator.
- The Yukon Spill Report Centre must be contacted at **(867) 667-7244** if the spill exceeds the reporting thresholds presented in the Spill Response Plan.
- Spill cleanup will be undertaken as per the MSDS for lime.
- Lime contaminated soil, snow or water will be placed on the heap leach facility during operations, to avoid offsite disposal.

15 BEST MANAGEMENT PRACTICE - METAL CONTAINING SLUDGE

Chemical name/class:	CAS #:	n
Designated Work Area:		Mine water treatment plant

Preliminary estimates indicate that the Mine Waste Water Treatment Plant (MWTP) will produce approximately 117 tonnes of dry solids per year (2333 total dry tonnes) of low pH (ferric and barium) sludge which will require encapsulation. Sulphate will be managed by gypsum solubility and water management practices. Based on these preliminary assumptions, the quantity of caustic sludge produced during MWTP operations is estimated to average 237 tonnes per year (4744 total dry tonnes).

The sludge produced by the MWTP during the Operations Phase will be temporarily placed and stored on freeze consolidation pad(s) adjacent to the MWTP for the purpose of managing solids during operation. During the closure phase of the Project, the caustic sludge will be transferred to the heap and incorporated into the closure cap for final disposal.

Low pH sludge will be encapsulated in an engineered synthetic liner and covered with earth fill and growth media. This pad will have sufficient capacity to contain all the ferric sludge produced over the life of mining and closure. Further details pertaining to sludge management are provided in SGC's Sludge Management Plan (Appendix 9.4 of the WUL application and Appendix K section 5.4 of Part 1 of the QML application).

All spills will be reported to the SGC Environmental Coordinator. The Yukon Spill Report Centre must be contacted at **(867) 667-7244** if the spill exceeds the reporting thresholds presented in the Spill Response Plan.

Spill cleanup will be undertaken as per spill cleanup procedures for hazardous materials or waste. Spilled materials will be contained and placed within the engineered synthetic liner as described above.

16 BEST MANAGEMENT PRACTICE - MISCELLANEOUS HAZARDOUS / SPECIAL WASTE

Chemical name/class:	aerosol cans, used paint tins, radioactive materials, used oil and fuel filters, etc.	CAS #:	n/a
Designated Work Area:		Special waste storage area, Camp, Truck shop, Crushing facility, ADR facility, and Mine water treatment plant	

SGC will ensure that minimal miscellaneous hazardous / special waste is produced by the Project. Items that will fall into this category include aerosol cans, used paint tins, radioactive materials, used oil and fuel filters, and typical domestic hazardous / special wastes.

Miscellaneous hazardous/special waste will be stored in a dedicated bin within the special waste storage area. Used oil and fuel filters will be incinerated. Other miscellaneous hazardous/special waste will be transported offsite for disposal in a permitted third party hazardous / special waste disposal facility or landfill.

- All spills will be reported to the SGC Environmental Coordinator.
- The Yukon Spill Report Centre must be contacted at **(867) 667-7244** if the spill exceeds the reporting thresholds presented in the Spill Response Plan.

Spill cleanup will be undertaken as per spill cleanup procedures for hazardous materials or waste. Spilled materials will be contained and placed within the bin at the special waste storage area.

17 BEST MANAGEMENT PRACTICE - PROPANE

Chemical name/class:	Propane Class 1 – Flammable gas	CAS #:	74-98-6
Designated Work Area:	Camp and ADR facility		

Propane will be used as fuel for heating and some aspects of the process in the ADR facility. Propane will be supplied by tank and stored in 19,000 litres propane tanks at the mine site.

- Handle, store and dispose of storage and use of propane is conducted in accordance with the supplier MSDS.
- Procure approved commercial propane tanks.
- Propane tanks storage sites will be cleared of vegetation, and will be away from roads and areas where mining machinery operate.
- No smoking signs and no open flame will be placed at propane storage areas.
- Should propane leaks occur, SGC will ensure that the source of the leaks is detected as early as possible and that the leakages are stopped. No spill contingency procedure is applicable to propane, due to the gaseous nature of this product.

18 BEST MANAGEMENT PRACTICE - SMELTING FLUXES

Chemical name/class:	Sodium tetra borate	CAS #:	1330-43-4
Designated Work Area:	Refinery		

The smelting fluxes are used in the refinery for slag formation. SGC will ensure that personnel handle, store and dispose of smelting fluxes in accordance with the supplier MSDS.

- Smelting fluxes will be supplied in bags and will be stored in the supplier bags/ packaging. The smelting fluxes will be stored in the refinery in a locked storeroom.
- Waste smelting fluxes are not expected, however smelting flux packaging and any unexpected/spilled smelting flux waste, will be stored in bins in the special waste storage facility and transported offsite to a permitted third party hazardous / special waste disposal facility or landfill.
- All spills will be reported to the SGC Environmental Coordinator.
- The Yukon Spill Report Centre must be contacted at **(867) 667-7244** if the spill exceeds the reporting thresholds presented in the Spill Response Plan.
- Spill cleanup will be undertaken as per the MSDS for smelting fluxes.

19 BEST MANAGEMENT PRACTICE - SODIUM CYANIDE

Chemical name/class:	NaCN	CAS #:	143-33-9
Designated Work Area:	ADR facility		

Sodium Cyanide is used in the heap leaching circuit for gold extraction. SGC will ensure that personnel handle, store and dispose of sodium cyanide in accordance with the supplier MSDS.

Particular care will be taken with the management of cyanide, to ensure that no cyanide is released to the natural environment without prior safe destruction. Please refer to the Cyanide Management Plan for additional information on the transportation, handling, storage and use of cyanide.

In the unlikely event that Sodium Cyanide or cyanide in solution requires disposal, SGC will safely gather, handle and transport the material for disposal with the heap leach facility and ADR facility, such that no external disposal is required. Prior to mine closure a program will be implemented to destroy cyanide and remove residual cyanide in all forms from the Project site.

20 BEST MANAGEMENT PRACTICE - SODIUM HYDROXIDE

Chemical name/class:	Sodium Hydroxide (NaOH)	CAS #:	1310-73-2
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Designated Work Area:

ADR facility

Sodium Hydroxide is used in desorption of gold from the activated carbon in the ADR. It is supplied as solid pellets, which must not be exposed to moisture during storage. Roughly 90 kg will be used per day and a 2-week supply will be stored on site. NaOH is commonly known as lye or caustic soda. NaOH is a strong corrosive base and storage facilities must be appropriately constructed to avoid corrosion of structures.

- Handle, store and dispose of store and dispose of sodium hydroxide in accordance with the supplier MSDS.
- NaOH will be stored in the ADR facility within secondary containment foundation, in the supplier packaging. The storage facility will be in an area where no solution or water is handled or stored to ensure that the packaged NaOH remains dry.
- Spill kits and personal protective equipment will be provided at the areas where NaOH is stored and handled. Storage of NaOH will be undertaken to prevent accidental interactions with Hydrochloric acid in the stripping circuit. This will be carried out by having separate storage facilities and separate drainage for these facilities.
- No waste NaOH is expected, however in the case of a spill, contaminated spill cleanup sorbent materials, will be handled as per the Spill Response Plan, and disposed of as hazardous/ special waste offsite.
- NaOH packaging or containers will not be used for any other purpose, the containers will either be returned to the supplier or disposed of as hazardous / special waste in permitted third party hazardous / special waste disposal facility or landfill.
- All spills will be reported to the SGC Environmental Coordinator.
- The Yukon Spill Report Centre must be contacted at **(867) 667-7244** if the spill exceeds the reporting thresholds presented in the Spill Response Plan.
- Spill cleanup will be undertaken as per a MSDS for NaOH. Spill kit sorbent materials, soil or snow used to contain a NaOH spill will be placed in hazardous / special waste bins for transportation offsite to permitted third party facility or landfill accepting hazardous / special waste.

21 BEST MANAGEMENT PRACTICE - WINDOW WASHING FLUID

Chemical name/class:	Window washing Fluid	CAS #:	67-56-1
Designated Work Area:	Truck shop		

Window washing fluid will be used during cold conditions to prevent washing water from freezing.

- Handle, store and dispose of store and dispose of window washing fluid in accordance with the supplier MSDS.
- Window washing fluid will be stored in the supplier containers in a locked storeroom in the truck shop.
- No waste window washing fluid is expected, except for contaminated spill cleanup sorbent materials, which will be handled as per the Spill Response Plan, and disposed of as hazardous/ special waste offsite.
- Window washing fluid packaging or containers will not be used for any other purpose; the containers will be disposed of as hazardous / special waste in permitted third party hazardous / special waste disposal facility or landfill.
- All spills will be reported to the SGC Environmental Coordinator.
- The Yukon Spill Report Centre must be contacted at **(867) 667-7244** if the spill exceeds the reporting thresholds presented in the Spill Response Plan.
- Spill cleanup will be undertaken as per the MSDS for window washing fluid. Spill kit sorbent materials, soil or snow used to contain a window washing fluid spill will be placed in hazardous / special waste bins for transportation offsite to a permitted third party facility or landfill accepting hazardous / special waste.

APPENDIX D
Material Safety Data Sheets

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SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: MOBIL ANTIFREEZE EXTRA
Product Description: Glycol
Product Code: 330977, 351010601020
Intended Use: Antifreeze/coolant

COMPANY IDENTIFICATION

Supplier: East Coast Lubes Pty Ltd (Queensland and Northern Territory)
A.B.N. 37 117 203 611
Cnr North and Mort Streets
Toowoomba, Queensland 4350 Australia

24 Hour Environmental / Health Emergency Telephone 1300 131 001
Supplier General Contact 1800 069 019

Supplier: Southern Cross Lubes (Victoria and Tasmania)
58-66 Ajax Road
Altona, Victoria 3018, Australia

24 Hour Environmental / Health Emergency Telephone 1300 131 001
Product Technical Information 1300 466 245
Supplier General Contact 1300 552 861

Supplier: Perkal Pty Ltd Trading as Statewide Oil (Western Australia)
A.B.N. 43 009 283 363
14 Beete Street
Welshpool, Western Australia 6106 Australia

24 Hour Environmental / Health Emergency Telephone (8:00am to 4:30pm Mon to Fri) 1300 919 904
Product Technical Information (08) 9350 6777
Supplier General Contact (08) 9350 6777

Supplier: Perkal Pty Ltd Trading as Roto Oil (South Australia)
A.B.N. 43 009 283 363
6-10 Streiff Rd
Wingfield, South Australia 5013 Australia

24 Hour Environmental / Health Emergency Telephone (8:00am to 4:30pm Mon to Fri) 1300 919 904
Product Technical Information (08) 8359 8995
Supplier General Contact (08) 8359 8995

SECTION 2 HAZARDS IDENTIFICATION

Product Name: MOBIL ANTIFREEZE EXTRA
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This material is hazardous according to regulatory guidelines (see (M)SDS Section 15).

GHS CLASSIFICATION:

Acute oral toxicant: Category 4. Specific target organ toxicant (repeated exposure): Category 2.

GHS Label Elements:

Pictogram:



Signal Word: Warning

Hazard Statements:

Health: H302: Harmful if swallowed. H373: May cause damage to organs through prolonged or repeated exposure. Kidney

Precautionary Statements:

General: P101: If medical advice is needed, have product container or label at hand. P102: Keep out of reach of children. P103: Read label before use.

Prevention: P201: Obtain special instructions before use. P202: Do not handle until all safety precautions have been read and understood. P264: Wash skin thoroughly after handling. P270: Do not eat, drink or smoke when using this product. P280: Wear protective gloves and clothing.

Response: P301 + P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. P308 + P313: IF exposed or concerned: Get medical advice/attention. P314: Get medical advice/attention if you feel unwell. P330: Rinse mouth.

Storage: P405: Store locked up.

Disposal: P501: Dispose of contents and container in accordance with local regulations.

Contains: ETHYLENE GLYCOL

Other hazard information:

Physical / Chemical Hazards:

No significant hazards.

Health Hazards:

High-pressure injection under skin may cause serious damage. Ingestion may cause serious adverse effects and may be fatal. May cause kidney failure and central nervous system effects. Prolonged exposure to elevated concentrations of mist or liquid may cause irritation of the skin, eyes, and respiratory tract.

Environmental Hazards:

No significant hazards.

Product Name: MOBIL ANTIFREEZE EXTRA

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NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a mixture.

Reportable Hazardous Substance(s) or Complex Substance(s)

Name	CAS#	Concentration*	GHS Hazard Codes
2-ETHYLHEXANOIC ACID, SODIUM SALT	19766-89-3	< 3.0%	H361(D)
DISODIUM TETRABORATE PENTAHYDRATE	12179-04-3	< 1.0%	H319(2A), H360(1B)(D), H360(1B)(F)
ETHYLENE GLYCOL	107-21-1	> 90.0%	H302, H373

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume. Other ingredients determined not to be hazardous up to 100%.

SECTION 4 FIRST AID MEASURES

INHALATION

Immediately remove from further exposure. Get immediate medical assistance. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. Give supplemental oxygen, if available. If breathing has stopped, assist ventilation with a mechanical device.

SKIN CONTACT

Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

Seek immediate medical attention.

NOTE TO PHYSICIAN

This product contains ethylene glycol and/or diethylene glycol which, if ingested, are metabolized to toxic metabolites by the enzyme alcohol dehydrogenase, for which ethanol and 4-methylpyrazole {U.S. drug name Fomepizole, trade name Antizol} are antagonists. Administration of oral or intravenous ethanol or intravenous 4-methylpyrazole may arrest further metabolism of this material and thereby ameliorate the toxicity. Use of ethanol or 4-methylpyrazole does not affect toxic metabolites that are already present and is not a substitute for hemodialysis.

SECTION 5 FIRE FIGHTING MEASURES

Product Name: MOBIL ANTIFREEZE EXTRA

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EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, alcohol-resistant foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

Inappropriate Extinguishing Media: Straight streams of water or standard foam

FIRE FIGHTING

Fire Fighting Instructions: Evacuate area. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Fire-fighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards: Hazardous material. Firefighters should consider protective equipment indicated in Section 8.

Hazardous Combustion Products: Aldehydes, Incomplete combustion products, Oxides of carbon, Smoke, Fume

FLAMMABILITY PROPERTIES

Flash Point [Method]: >120°C (248°F) [EN/ISO 2719]

Flammable Limits (Approximate volume % in air): LEL: 4.9 UEL: 14.6

Autoignition Temperature: >440°C (824°F) [DIN 51794]

SECTION 6

ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

PROTECTIVE MEASURES

Avoid contact with spilled material. Warn or evacuate occupants in surrounding and downwind areas if required, due to toxicity or flammability of the material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do so without risk. Do not touch or walk through spilled material. Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do so without risk. Material will sink. Remove material, as much as possible, using mechanical equipment.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Remove debris in path of spill and remove contaminated debris from shoreline and water surface. Dispose of according to local regulations. Large Spills: Dyke far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7 HANDLING AND STORAGE

HANDLING

Avoid breathing mists or vapour. Avoid contact with skin. Prevent small spills and leakage to avoid slip hazard.

Static Accumulator: This material is not a static accumulator.

STORAGE

Do not store in open or unlabelled containers.

Material is defined under the National Standard [NOHSC:1015] Storage and Handling of Workplace Dangerous Goods.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMIT VALUES

Exposure limits/standards (Note: Exposure limits are not additive)

Substance Name	Form	Limit/Standard			Note	Source
DISODIUM TETRABORATE PENTAHYDRATE		TWA	1 mg/m ³			Australia OELs
DISODIUM TETRABORATE PENTAHYDRATE	Inhalable fraction.	STEL	6 mg/m ³			ACGIH
DISODIUM TETRABORATE PENTAHYDRATE	Inhalable fraction.	TWA	2 mg/m ³			ACGIH
ETHYLENE GLYCOL	Vapour.	STEL	104 mg/m ³	40 ppm	Skin	Australia OELs
ETHYLENE GLYCOL	Particulate.	TWA	10 mg/m ³		Skin	Australia OELs
ETHYLENE GLYCOL	Vapour.	TWA	52 mg/m ³	20 ppm	Skin	Australia OELs
ETHYLENE GLYCOL	Aerosol.	Ceiling	100 mg/m ³			ACGIH

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

Biological limits

No biological limits allocated.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Product Name: MOBIL ANTIFREEZE EXTRA

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Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

Particulate

No protection is ordinarily required under normal conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapour warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

Nitrile, Viton

Chemical resistant gloves are recommended.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

Chemical/oil resistant clothing is recommended.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practise good housekeeping.

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9

PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Liquid

Colour: Blue-Green

Odour: Odourless

Odour Threshold: N/D

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IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 20 °C): 1.12

Flammability (Solid, Gas): N/A

Flash Point [Method]: >120°C (248°F) [EN/ISO 2719]

Flammable Limits (Approximate volume % in air): LEL: 4.9 UEL: 14.6

Autoignition Temperature: >440°C (824°F) [DIN 51794]

Boiling Point / Range: 170°C (338°F)

Decomposition Temperature: N/D

Vapour Density (Air = 1): N/D

Vapour Pressure: N/D

Evaporation Rate (n-butyl acetate = 1): N/D

pH: N/D

Log Pow (n-Octanol/Water Partition Coefficient): N/D

Solubility in Water: Complete

Viscosity: [N/D at 40°C]

Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D

Melting Point: N/D

SECTION 10	STABILITY AND REACTIVITY
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STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

INCOMPATIBLE MATERIALS: Strong Acids, Strong oxidisers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

SECTION 11	TOXICOLOGICAL INFORMATION
-------------------	----------------------------------

INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data for material.	Negligible hazard at ambient/normal handling temperatures.
Ingestion	
Acute Toxicity (Human): LDLo 100 ml	Moderately toxic. Based on assessment of the components.
Skin	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin Corrosion/Irritation: No end point data for material.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
Eye	

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Serious Eye Damage/Irritation: No end point data for material.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.
Sensitisation	
Respiratory Sensitization: No end point data for material.	Not expected to be a respiratory sensitizer.
Skin Sensitization: No end point data for material.	Not expected to be a skin sensitizer. Based on assessment of the components.
Aspiration: No end point data for material.	Not expected to be an aspiration hazard. Based on physico-chemical properties of the material.
Germ Cell Mutagenicity: No end point data for material.	Not expected to be a germ cell mutagen. Based on assessment of the components.
Carcinogenicity: No end point data for material.	Not expected to cause cancer. Based on assessment of the components.
Reproductive Toxicity: No end point data for material.	Contains a substance that may be a reproductive toxicant. Based on assessment of the components.
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data for material.	Not expected to cause organ damage from a single exposure.
Repeated Exposure: No end point data for material.	Concentrated, prolonged or deliberate exposure may cause organ damage. Based on assessment of the components.

TOXICITY FOR SUBSTANCES

NAME	ACUTE TOXICITY
ETHYLENE GLYCOL	Oral Lethality: LD 50 4700 mg/kg (Rat)

OTHER INFORMATION

For the product itself:

Target Organs Repeated Exposure: Kidney

Contains:

ETHYLENE GLYCOL (EG): Repeated high oral exposure has caused kidney damage, neurological effects, degeneration of the liver and changes in blood chemistry and circulating blood cells in laboratory animals. Repeated overexposure has the potential to cause similar toxic effects in humans. EG causes developmental and reproductive effects at high dose levels in laboratory animals. The relevance of these findings to humans is uncertain. However, as a precaution, avoid exposure during pregnancy. Sodium tetraborate: Adverse effects on fertility and fetal development have been observed in laboratory animals.

IARC Classification:

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = IARC 1

2 = IARC 2A

3 = IARC 2B

SECTION 12

ECOLOGICAL INFORMATION

Product Name: MOBIL ANTIFREEZE EXTRA
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The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.

MOBILITY

Material -- Expected to remain in water or migrate through soil.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Material -- Expected to be readily biodegradable.

Atmospheric Oxidation:

Material -- Expected to degrade rapidly in air

BIOACCUMULATION POTENTIAL

Material -- Potential to bioaccumulate is low.

SECTION 13	DISPOSAL CONSIDERATIONS
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Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Even though this product is readily biodegradable, it must not be indiscriminately discarded into the environment. Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

SECTION 14	TRANSPORT INFORMATION
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LAND (ADG) : Not Regulated for Land Transport

SEA (IMDG): Not Regulated for Sea Transport according to IMDG-Code

Marine Pollutant: No

Product Name: MOBIL ANTIFREEZE EXTRA

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AIR (IATA): Not Regulated for Air Transport
, EHS

SECTION 15	REGULATORY INFORMATION
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This material is considered hazardous according to Australia Model Work Health and Safety Regulations.

Product is not regulated according to Australian Dangerous Goods Code.

Poison Schedule number allocated by the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) established under the Therapeutic Goods Act.

POISON SCHEDULE NUMBER: S5

AS1940 COMBUSTIBLE CLASS: C1

REGULATORY STATUS AND APPLICABLE LAWS AND REGULATIONS

Listed or exempt from listing/notification on the following chemical inventories: IECSC, KECI, TSCA
Special Cases:

Inventory	Status
AICS	Restrictions Apply
ENCS	Restrictions Apply

SECTION 16	OTHER INFORMATION
-------------------	--------------------------

KEY TO ABBREVIATIONS AND ACRONYMS:

N/D = Not determined, N/A = Not applicable, STEL = Short-Term Exposure Limit, TWA = Time-Weighted Average

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):

H302: Harmful if swallowed; Acute Tox Oral, Cat 4

H319(2A): Causes serious eye irritation; Serious Eye Damage/Irr, Cat 2A

H360(1B)(D): May damage the unborn child; Repro Tox, Cat 1B (Develop)

H360(1B)(F): May damage fertility; Repro Tox, Cat 1B (Fertility)

H361(D): Suspected of damaging the unborn child; Repro Tox, Cat 2 (Develop)

H373: May cause damage to organs through prolonged or repeated exposure; Target Organ, Repeated, Cat 2

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Company Logo (Fld 1) information was modified.

GHS Precautionary Statements - Prevention information was modified.

GHS Target Organ List information was added.

GHS Target Organ List information was deleted.

Perkal Pty Ltd Trading as Roto Oil (South Australia): Section 01: Supplier Mailing Address information was added.

Perkal Pty Ltd Trading as Roto Oil (South Australia): Section 01: Supplier Mailing Address information was deleted.

Perkal Pty Ltd Trading as Statewide Oil (Western Australia): Section 01: Supplier Mailing Address information was added.

Perkal Pty Ltd Trading as Statewide Oil (Western Australia): Section 01: Supplier Mailing Address information was

Product Name: MOBIL ANTIFREEZE EXTRA

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deleted.

Section 05: Fire Fighting Measures - Fire Fighting Instruction information was modified.

Section 16: Global Disclaimer information was modified.

Southern Cross Lubes (Victoria and Tasmania): Section 01: Supplier Mailing Address information was added.

Southern Cross Oil Pty Ltd Trading as Southern Cross Lubes (Victoria and Tasmania): Section 01: Supplier Mailing Address information was deleted.

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DGN: 7076356DAU (551452)

Prepared by: Exxon Mobil Corporation
EMBSI, Clinton NJ USA

Contact Point: See Section 1 for Local Contact number

End of (M)SDS

Gas Line Antifreeze

SECTION 1. IDENTIFICATION

Product Identifier	Gas Line Antifreeze
Other Means of Identification	15-355, 15-356, 35-351SO, 35-355C, 35-355H, 35-355WM, 35-356CHR, 35-356CQ, 35-356LAU, 35-356PC, 35-356SO, 35-356SS
Other Identification	Methyl Hydrate
Recommended Use	Please refer to Product label.
Restrictions on Use	None known.
Manufacturer / Supplier	Recochem Inc., 850 Montee de Liesse, Montreal, QC, H4T 1P4, Compliance and Regulatory Department, 905-878-5544, www.recochem.com
Emergency Phone No.	CANUTEC, 613-996-6666, 24 Hours
SDS No.	1605

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquid - Category 2; Acute toxicity (Oral) - Category 3; Acute toxicity (Dermal) - Category 3; Acute toxicity (Inhalation) - Category 3; Specific target organ toxicity (single exposure) - Category 1

GHS Label Elements



Signal Word:
Danger

Hazard Statement(s):

H225	Highly flammable liquid and vapour.
H301	Toxic if swallowed.
H311	Toxic in contact with skin.
H331	Toxic if inhaled.
H370	Causes damage to organs (eyes) if swallowed.

Precautionary Statement(s):

Prevention:

P210	Keep away from heat, sparks, open flames, and hot surfaces. – No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical, ventilating, lighting, and other equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P260	Do not breathe fume, mist, vapours, spray.
P264	Wash hands and skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.

Product Identifier:	Gas Line Antifreeze
SDS No.:	1605
Date of Preparation:	November 09, 2015

P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing.

Response:

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTRE/doctor.
P330 Rinse mouth.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P312 Call a POISON CENTRE/doctor if you feel unwell.
P363 Wash contaminated clothing before reuse.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312 Call a POISON CENTRE/doctor if you feel unwell.
P321 Specific treatment (see supplemental first aid instruction on this label).
P370 + P378 In case of fire: Use appropriate foam, carbon dioxide, dry chemical powder, water spray or fog to extinguish.

Storage:

Store in a well ventilated place. Keep cool. Keep container tightly closed. Store locked up.

Disposal:

Dispose of contents/container in accordance with applicable regional, national and local laws and regulations.

Other Hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance:

Chemical Name	CAS No.	%	Other Identifiers
Methanol	67-56-1	60-100	

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Inhalation

Take precautions to ensure your own safety before attempting rescue (e.g. wear appropriate protective equipment). Remove source of exposure or move to fresh air. Keep at rest in a position comfortable for breathing. If breathing has stopped, trained personnel should begin rescue breathing. If the heart has stopped, trained personnel should start cardiopulmonary resuscitation (CPR) or automated external defibrillation (AED). Avoid mouth-to-mouth contact by using a barrier device. Get medical advice/attention if you feel unwell or are concerned.

Skin Contact

Avoid direct contact. Wear chemical protective clothing if necessary. Take off immediately contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Wash gently and thoroughly with lukewarm, gently flowing water and mild soap for 5 minutes. Get medical advice/attention if you feel unwell or are concerned. Thoroughly clean clothing, shoes and leather goods before reuse or dispose of safely.

Eye Contact

Avoid direct contact. Wear chemical protective gloves if necessary. Immediately rinse the contaminated eye(s) with lukewarm, gently flowing water for at least 30 minutes, while holding the eyelid(s) open. If eye irritation persists, get medical advice/attention.

Ingestion

Rinse mouth with water. Never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Do not induce vomiting. If vomiting occurs naturally, lie on your side in the recovery position. Rinse

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mouth with water again. If breathing has stopped, trained personnel should immediately begin rescue breathing. If the heart has stopped, trained personnel should start cardiopulmonary resuscitation (CPR) or automated external defibrillation (AED). Avoid mouth-to-mouth contact by using a barrier device. Immediately call a Poison Centre or doctor. Treatment is urgently required.

Most Important Symptoms and Effects, Acute and Delayed

No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Immediate Medical Attention and Special Treatment

Target Organs

Eyes, liver, nervous system.

Special Instructions

Acute exposure to methanol, either through ingestion or breathing high airborne concentrations can result in symptoms appearing between 40 minutes and 72 hours after exposure. Symptoms and signs are usually limited to CNS, eyes and gastrointestinal tract. Because of the initial CNS's effects of headache, vertigo, lethargy and confusion, there may be an impression of ethanol intoxication. Blurred vision, decreased acuity and photophobia are common complaints. Treatment with ipecac or lavage is indicated in any patient presenting within two hours of ingestion. A profound metabolic acidosis occurs in severe poisoning and serum bicarbonate levels are a more accurate measure of severity than serum methanol levels. Treatment protocols are available from most major hospitals and early collaboration with appropriate hospitals is recommended.

Medical Conditions Aggravated by Exposure

Respiratory conditions, dermatitis, eye conditions.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Carbon dioxide, dry chemical powder or appropriate foam. Special "alcohol resistant fire-fighting foams".

Unsuitable Extinguishing Media

Water is not effective for extinguishing a fire. It may not cool product below its flash point.

Specific Hazards Arising from the Chemical

Highly flammable liquid and vapour. Can ignite at room temperature. Releases vapour that can form explosive mixture with air. Can be ignited by static discharge. Can accumulate static charge by flow, splashing or agitation. Even dilute solutions in water may be flammable. May travel a considerable distance to a source of ignition and flash back to a leak or open container. See Section 9 (Physical and Chemical Properties) for flash point and explosive limits. Burns with an invisible flame. May accumulate in hazardous amounts in low-lying areas especially inside confined spaces, resulting in a fire hazard.

In a fire, the following hazardous materials may be generated: toxic chemicals; very toxic carbon monoxide, carbon dioxide; very toxic, flammable formaldehyde.

Special Protective Equipment and Precautions for Fire-fighters

Review Section 6 (Accidental Release Measures) for important information on responding to leaks/spills.

See Skin Protection in Section 8 (Exposure Controls/Personal Protection) for advice on suitable chemical protective materials.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

Evacuate the area immediately. Isolate the hazard area. Keep out unnecessary and unprotected personnel. Evacuate downwind locations. Use the personal protective equipment recommended in Section 8 of this safety data sheet. Increase ventilation to area or move leaking container to a well-ventilated and secure area. Eliminate all ignition sources. Use grounded, explosion-proof equipment. May accumulate in hazardous amounts in low-lying areas especially inside confined spaces, if ventilation is not sufficient. Distant ignition and flashback are possible.

Environmental Precautions

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Do not allow into any sewer, on the ground or into any waterway.

Methods and Materials for Containment and Cleaning Up

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). Use spark-proof tools and explosion-proof equipment. 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

Precautions for Safe 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. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Conditions for Safe Storage

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. Eliminate all ignition sources. 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 unlabeled containers. Use appropriate containment to avoid environmental contamination.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Chemical Name	ACGIH TLV®		OSHA PEL		AIHA WEEL	
	TWA	STEL	TWA	Ceiling	8-hr TWA	TWA
Methanol	200 ppm	250 ppm	200 ppm	250 ppm		

Appropriate Engineering Controls

General ventilation is usually adequate. For large scale use of this product: do not allow product to accumulate in the air in work or storage areas, or in confined spaces. Use local exhaust ventilation, if general ventilation is not adequate to control amount in the air. Use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically safe electrical systems in areas where this product is used and stored. Control static electricity discharges which includes bonding of equipment to ground. Use only non-combustible, compatible materials for walls, floors, ventilation system, air cleaning devices, pallets, shelving. Provide safety shower in work area, if contact or splash hazard exists.

Individual Protection Measures

Eye/Face Protection

Wear chemical safety goggles.

Skin Protection

Wear chemical protective clothing e.g. gloves, aprons, boots.

Nitrile rubber.

Respiratory Protection

Not normally required if product is used as directed. For non-routine or emergency situations: wear a NIOSH approved air-purifying respirator with an organic vapour cartridge.

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SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	Clear colourless liquid.
Odour	Pungent
Odour Threshold	4.2 - 5960 ppm (5.5 - 7794.2 mg/m ³)
pH	Not available
Melting Point/Freezing Point	-97.7 °C (-143.9 °F) (melting); -97.7 °C (-143.9 °F) (freezing)
Initial Boiling Point/Range	64.7 °C (148.5 °F)
Flash Point	11 °C (52 °F) (closed cup)
Evaporation Rate	4.1 (n-butyl acetate = 1)
Flammability (solid, gas)	Not applicable
Upper/Lower Flammability or Explosive Limit	36% (upper); 6% (lower)
Vapour Pressure	96.0 mm Hg (12.8 kPa) at 20 °C
Vapour Density (air = 1)	1.1
Relative Density (water = 1)	0.791 at 25 °C
Solubility	Soluble in water; Soluble in all proportions in alcohols (e.g. ethanol).
Partition Coefficient, n-Octanol/Water (Log K _{ow})	-0.77 at 20 °C
Auto-ignition Temperature	464 °C (867 °F)
Decomposition Temperature	Not available
Viscosity	0.686 - 0.699 mm ² /s at 25 °C (kinematic); 0.54 - 0.55 mPa.s at 20 °C (dynamic)
Other Information	
Physical State	Liquid
Molecular Weight	32.04

SECTION 10. STABILITY AND REACTIVITY

Reactivity

None known.

Chemical Stability

Normally stable.

Possibility of Hazardous Reactions

None known.

Conditions to Avoid

Heat. Open flames, sparks, static discharge, heat and other ignition sources. Temperatures above 11.0 °C (51.8 °F)

Incompatible Materials

Reacts violently with: reacts explosively with: strong oxidizing agents (e.g. perchloric acid).

Highly reactive. Strong acids (e.g. hydrochloric acid).

Hazardous Decomposition Products

Very toxic carbon monoxide, carbon dioxide; very toxic, flammable formaldehyde.

SECTION 11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

Ingestion; eye contact; skin contact; inhalation.

Acute Toxicity

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Chemical Name	LC50	LD50 (oral)	LD50 (dermal)
Methanol	83867.5 mg/m ³ (rat) (4-hour exposure)	5628 mg/kg (rat)	15800 mg/kg (rabbit)

LC50: Not applicable.

LD50 (oral): Not applicable.

LD50 (dermal): Not applicable.

Skin Corrosion/Irritation

Human experience shows very mild irritation.

Serious Eye Damage/Irritation

Animal tests show serious eye irritation.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

May be harmful based on human experience and animal tests. Depression of the central nervous system. Symptoms may include headache, nausea, dizziness, drowsiness and confusion. A severe exposure can cause unconsciousness.

Toxic, can cause death based on human experience. At high concentrations.

Skin Absorption

Harmful based on human experience. Can cause effects as described for inhalation. Depression of the central nervous system. Symptoms may include headache, nausea, dizziness, drowsiness and confusion. A severe exposure can cause unconsciousness.

Ingestion

Toxic, can cause death depression of the central nervous system, impaired vision and blindness. In some cases, there may be delayed effects on the nervous system. Symptoms may include headache, nausea, vomiting, dizziness, drowsiness and confusion. A severe exposure may cause stomach pain, muscle pain, difficult breathing and coma. Vision can be impaired and permanent blindness can result. There may be other permanent effects on the nervous system e.g. tremor, seizures.

Aspiration Hazard

Not known to be an aspiration hazard.

STOT (Specific Target Organ Toxicity) - Repeated Exposure

May cause damage to organs based on limited evidence. If inhaled: effects on the central nervous system. Symptoms may include restlessness, reduced ability to think, muscle tremors, memory loss and personality changes. effects similar to STOT (Specific Target Organ Toxicity) - Single Exposure, as described above.

May cause Following skin contact: dermatitis. Symptoms may include dry, red, cracked skin (dermatitis). effects similar to STOT (Specific Target Organ Toxicity) - Single Exposure, as described above.

May cause If inhaled: at high concentrations visual disturbances, cataracts, opacities.

May cause If inhaled: at high concentrations harmful effects on the liver.

Respiratory and/or Skin Sensitization

Not known to be a respiratory sensitizer. Not known to be a skin sensitizer.

Carcinogenicity

Chemical Name	IARC	ACGIH®	NTP	OSHA
Methanol	Not Listed	Not designated	Not Listed	Not Listed

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Reproductive Toxicity

Development of Offspring

Animal studies show effects on the offspring. If inhaled: known to cause: decreased weight, birth defects. Teratogenic(external, soft tissue and skeletal defects) embryotoxic (late resorptions).

Sexual Function and Fertility

Not known to cause effects on sexual function or fertility.

Effects on or via Lactation

May cause effects on or via lactation. Can transfer to mother's milk.

Germ Cell Mutagenicity

Conclusions cannot be drawn from the limited studies available.

Interactive Effects

No information was located.

SECTION 12. ECOLOGICAL INFORMATION

Toxicity

Acute Aquatic Toxicity

Chemical Name	LC50 Fish	EC50 Crustacea	ErC50 Aquatic Plants	ErC50 Algae
Methanol	15400 mg/L (Lepomis macrochirus (bluegill); 96-hour)	10000 mg/L (Daphnia magna (water flea); 48-hour)		

Chronic Aquatic Toxicity

Chemical Name	NOEC Fish	EC50 Fish	NOEC Crustacea	EC50 Crustacea
Methanol	7900 mg/L (Lepomis macrochirus (bluegill); 200-hrs)			

Persistence and Degradability

Degrades rapidly based on quantitative tests.

Bioaccumulative Potential

This product and its degradation products are not expected to bioaccumulate.

Mobility in Soil

No information was located.

Other Adverse Effects

There is no information available.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

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

Regulation	UN No.	Proper Shipping Name	Transport Hazard Class(es)	Packing Group
Canadian TDG	1230	METHANOL	3 (6.1)	II
US DOT	1230	METHANOL	3 (6.1)	II

Environmental Hazards Not applicable

Special Precautions for User Please note: In containers of 1 L (1Kg) capacity or less this product is classified as a "Limited Quantities""Consumer Commodity" under TDG regulations.
In containers of 1 L (1Kg) this product is qualified as a "consumer commodity" ORM-D under DOT

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code
Not applicable

SECTION 15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations

Canada

Domestic Substances List (DSL) / Non-Domestic Substances List (NDSL)

All ingredients are listed on the DSL/NDSL.

USA

Toxic Substances Control Act (TSCA) Section 8(b)

All ingredients are listed on the TSCA Inventory.

Additional USA Regulatory Lists

California Proposition 65: WARNING: This product contains chemicals known to the State of California to cause birth defects.

SECTION 16. OTHER INFORMATION

SDS Prepared By Compliance and Regulatory Department

Phone No. 905-878-5544

Date of Preparation November 09, 2015

Additional Information We are committed to uphold the Industry Consumer Ingredient Communication Voluntary Initiative.

Please send us your request by visiting our website at www.recochem.com.

Ingredients present (intentionally added ingredients) at a concentration of greater than one percent (1%) shall be listed in descending order of predominance. Ingredients present at a concentration of not more than one percent shall be listed but may be disclosed without respect to order of predominance.

Disclaimer

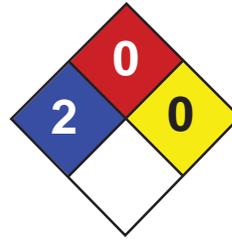
Notice to reader: To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability 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.

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Personal Protection	E

Material Safety Data Sheet

Copper sulfate pentahydrate MSDS

Section 1: Chemical Product and Company Identification

Product Name: Copper sulfate pentahydrate

Catalog Codes: SLC3778, SLC4567, SLC1774, SLC3565, SLC5353

CAS#: 7758-99-8

RTECS: GL8900000

TSCA: TSCA 8(b) inventory: No products were found.

CI#: Not applicable.

Synonym: Blue vitriol; Copper (II) Sulfate Pentahydrate

Chemical Name: Cupric sulfate pentahydrate

Chemical Formula: CuSO₄.5H₂O

Contact Information:

Sciencelab.com, Inc.

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Copper sulfate pentahydrate	7758-99-8	100

Toxicological Data on Ingredients: Copper sulfate pentahydrate: ORAL (LD50): Acute: 300 mg/kg [Rat.]. DERMAL (LD50): Acute: >2000 mg/kg [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects: Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells.

TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, liver. Repeated or prolonged exposure to the substance can produce target organs damage.

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.

Skin Contact:

In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation: Not available.

Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: Not applicable.

Explosion Hazards 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: Not applicable.

Special Remarks on Fire Hazards:

When heated to decomposition it emits toxic fumes. Solutions are acidic and can react with magnesium to evolve flammable hydrogen gas

Special Remarks on Explosion Hazards: Nitromethanes and copper salts spontaneously form explosive materials

Section 6: Accidental Release Measures

Small Spill:

Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill:

Use a shovel to put the material into a convenient waste disposal container. 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 and Storage

Precautions:

Do not ingest. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as metals, alkalis.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

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.

Personal Protection:

Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:

TWA: 1 (mg/m³) from ACGIH (TLV) [United States] Inhalation TWA: 0.1 (mg/m³) from OSHA (PEL) [United States] Inhalation TWA: 1 (mg/m³) from NIOSH Inhalation Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Crystalline granules solid. Powdered solid.)

Odor: Odorless.

Taste: Nauseous metallic.

Molecular Weight: 249.69 g/mole

Color: Blue. (Light.)

pH (1% soln/water): Not available.

Boiling Point: 150°C (302°F)

Melting Point: 110°C (230°F)

Critical Temperature: Not available.

Specific Gravity: 2.28 @ 15.6 deg. C (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, methanol.

Solubility:

Easily soluble in hot water. Soluble in cold water, methanol. Solubility in water: 31.6 g/100 ml @ 0 deg. C.; 203.3 g/100 ml @ 100 deg. C Solubility in methanol: 15.6 g/100 ml @ 18 deg. C. Insoluble in ethanol. It readily forms alkaline complexes at sufficiently high concentrations of amines or alkali cyanides. Practically insoluble in most organic solvents.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Excess heat (high temperatures), incompatible materials, exposure to air

Incompatibility with various substances: Reactive with metals, alkalis.

Corrosivity: Highly corrosive in presence of steel.

Special Remarks on Reactivity:

Air Sensitive. Slowly efforescent in air. Solutions of hyprobromite are decomposed by powerful catalytic action of cupric ions, even as impurities. Incompatible with finely powdered metals.

Special Remarks on Corrosivity:

Corrosive to finely powdered metals. Very corrosive to plain steel

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals:

Acute oral toxicity (LD50): 300 mg/kg [Rat.]. Acute dermal toxicity (LD50): >2000 mg/kg [Rat].

Chronic Effects on Humans:

MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. May cause damage to the following organs: kidneys, liver.

Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals:

Lowest Published Lethal Dose: LDL [Human] - Route: Oral; Dose: 1088 mg/kg

Special Remarks on Chronic Effects on Humans: May affect genetic material based on animal data

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: Skin: Causes skin irritation. May cause skin burns. It may cause and itching allergic eczema. Eyes: Causes eye irritation. May cause eye burns. It may cause conjunctivitis, corneal discoloration, ulceration and turbidity of the cornea. Inhalation: Causes respiratory tract (nose, throat, lung) irritation with coughing and wheezing. May cause ulceration and perforation of the nasal septum if inhaled in excessive quantities. Burning copper sulfate may result in irritating and poisonous gases which may irritate the respiratory tract and lungs, and may cause fume metal fever which is characterized by flu-like symptoms such as fever, chills, muscle aches. Ingestion: Harmful if swallowed. May cause gastrointestinal tract irritation with nausea, vomiting, diarrhea, metallic taste, burning sensation in the stomach or epigastrium, abdominal pain, and possible gastrointestinal tract bleeding. May affect metabolism (metabolic acidosis), liver (liver damage, jaundice), blood (Methemoglobin, hemolytic anemia), urinary system (kidney damage, hematuria, hemoglobinuria, albuminuria), behavior/nervous systems (somnolence, tremor, psychosis, muscle weakness, coma), cardiovascular system (lowering of blood pressure, dysthrythmia). Oral mucosa, vomitus, stools, and saliva may be stained blue or green following ingestion. Aspiration pneumonia may develop following emesis and CNS depression. Chronic Potential Health Effects: Skin: Repeated or prolonged skin contact may cause thickening of the skin.

Section 12: Ecological Information

Ecotoxicity:

Ecotoxicity in water (LC50): 0.1 ppm 48 hours [Goldfish]. 0.1 mg/l 96 hours [Rainbow Trout]. 2.5 mg/l 96 hours [Rainbow Trout].

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation:

If released to soil, copper sulfate may leach to groundwater, be partly oxidized, or bind to humic materials, clay, or hydrous of iron and manganese. In water, it will bind to carbonates as well as humic materials, clay and hydrous oxides of iron and manganese. Copper is accumulated by plants and animals, but it does not appear to biomagnify from plants to animals. This lack of biomagnification appears common with heavy metals. In air, copper aerosols (in general) have a residence time of 2 to 10 days in an unpolluted atmosphere and 0.1 to >4 in a polluted, urban areas.

Section 13: Disposal Considerations

Waste Disposal:

Copper dusts or mist or copper compounds may be disposed of in Group III sealed containers in a secure sanitary landfill. Copper containing soluble wastes can be concentrated through the use of ion exchange, reverse osmosis, or evaporators to the point where copper can be electrolytically removed and sent to a reclaiming firm. If recovery is not feasible, the copper can be precipitated through the use of caustics and the sludge deposited in a chemical waste landfill. Be sure to consult with authorities (waste regulators). Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 9: Miscellaneous hazardous material.

Identification: : Environmentally hazardous substance, n.o.s. (Cupric Sulfate) UNNA: 3077 PG: III

Special Provisions for Transport:

additional markings "Marine Pollutant" - required for bulk shipments. The words "Marine Pollutant" must be entered on the shipping paper in association iwth the basic DOT description for bulk shipments.

Section 15: Other Regulatory Information

Federal and State Regulations:

SARA 313 toxic chemical notification and release reporting: Copper compounds CERCLA: Hazardous substances.: Copper sulfate pentahydrate: 10 lbs. (4.536 kg)

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada): CLASS D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC):

R22- Harmful if swallowed. R36/38- Irritating to eyes and skin. R50/53- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. S22- Do not breathe dust. S60- This material and its container must be disposed of as hazardous waste. S61- Avoid release to the environment. Refer to special instructions/Safety data sheets.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 0

Reactivity: 0

Personal Protection: E

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

Health: 2

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:

Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Splash goggles.

Section 16: Other Information

References:

-The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987.

Other Special Considerations: Not available.

Created: 10/09/2005 05:01 PM

Last Updated: 11/01/2010 12:00 PM

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Safety Data Sheet

Section 1 – Identification

Product Identifier: SuperClean Degreaser and Foaming Degreaser

Other means of Identification: Cleaning Solution

Name and Address of Responsible Parties:

SuperClean Brands, LLC

1380 Corporate Center Curve, Suite 107

Eagan, MN 55121

Information Telephone #: 1-651-365-7500

24 Hr. Emergency Telephone Number: 1-800-424-9300

Contract Number: CCN644158

Section 2 – Hazards Identification

Classification of the Chemical: Clear light purple liquid. Citrus odor.

This material is classified as hazardous under OSHA regulations (29 CFR 1910.1200) (Hazcom 2012).

Hazardous classification: Corrosive to Metals – Category 1
Skin irritation – Category 2
Eye irritation – Category 2A

Label elements:

Signal Word: Warning

Hazard Statements: Corrosive liquid.
May cause skin irritation.
May cause serious eye irritation.

Precautionary Statements: Keep only in original container.
Store in corrosive resistant container with inner liner.
Absorb spillage to prevent material damage.
Wash hands thoroughly after handling.
If on Skin: Wash with plenty of soap and water.

Section 2 – Hazards Identification (Continued)

If skin irritation occurs get medical advice/attention.
Take off contaminated clothing and wash before reuse.
Wear protective gloves.
Wear eye protection such as goggles or safety glasses with side shields.
If in eyes: Rinse cautiously with water for 15 minutes.
Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists get medical advice/attention.
Do not eat, drink or smoke when using this product.
If swallowed: Immediately call a poison center/physician.
Rinse mouth.
Dispose of contents/container in accordance with local, state, federal or international regulations.

Hazard Pictogram(s):



Other Hazards not otherwise classified:

This product contains 7% ingredients of an unknown acute toxicity. See section 11 for more information.

Section 3 – Composition/Information on Ingredients

Chemical Name, Common Name	CAS #	Concentration wt/wt(*)
Sodium Metasilicate	6834-92-0	<5
Sodium hydroxide	1310-73-2	<5
Surfactant, blend	Trade secret	1-10

* Note: The exact concentrations of the chemical(s) above are being withheld as a trade secret.

Section 4 – First-Aid Measures

Description of first aid measures:

Inhalation: If inhaled remove victim to fresh air and keep at rest. Call a poison center or physician if you feel unwell.

Skin contact: Wash with plenty of soap and water. Take off contaminated clothing and wash before reuse. If skin irritation occurs get medical advice/attention.

Eye contact: If product gets in eyes flush with water for at least 15 minutes. If eye irritation persists seek medical advice/attention.

Ingestion: Do NOT induce vomiting unless instructed by medical personal. Never give anything by mouth to an unconscious person. Get medical attention.

Most important symptoms and effects, both acute and delayed:

May cause skin irritation.

May cause serious eye irritation.

Ingestion may cause gastrointestinal irritation, nausea, vomiting, diarrhea and burns to the mouth, throat and esophagus.

Indication of any immediate medical attention and special treatment needed:

Treat symptomatically.

Section 5 – Fire-Fighting Measures

Extinguishing media:

Suitable extinguishing media: Water fog, Carbon dioxide, Dry chemical, Foam.

Unsuitable extinguishing media: Not available.

Special hazards arising from the substance or mixture: None known.

Flammability classification: Not flammable by OSHA/WHMIS criteria.

Hazardous combustion products: Carbon oxides, other unidentified organic compounds.

Special protective equipment and precautions for firefighters:

Protective equipment for fire-fighters: Firefighters should wear proper protective equipment (Bunker gear) and self-contained breathing apparatus with full face operated in positive pressure mode.

Section 6 – Accidental Release Measures

Personal precautions, protective equipment and emergency procedures:

All persons dealing with the clean-up should use the appropriate chemically protective equipment. Keep people away from and upwind of spill/leak. Restrict access to area until completion of clean-up.

Methods and materials for containment and clean up:

If possible, prevention measures should be taken to stop any chemical from entering the ground water system. Ventilate the area. Scoop up material and place into suitable container(s). Dispose of according to local, state and federal regulations.

Section 7 – Handling and Storage

Precautions for safe handling:

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves and eye/face protection. Adequate ventilation should be supplied. Avoid prolonged contact with skin, eyes and clothing. Keep away from heat. Keep container tightly closed.

Conditions for safe storage:

Store in cool, dry and well ventilated place. Containers should be clearly identified, clear of obstructions and accessible only to authorized personnel. Have appropriate fire extinguishers/sprinkler system in place. Spill clean-up equipment should be in or near storage area.

Incompatible materials: Strong oxidizers, Strong acids.

Section 8 – Exposure Controls/Personal Protection

Exposure limits:

Chemical Name	ACGIH-TLV	OSHA-PEL
Sodium Metasilicate	Not Available	5mg/m ³ (TWA)
Sodium hydroxide	2mg/m ³	2mg/m ³
Surfactant, blend	Not Available	Not Available

Exposure controls:

Ventilation and Engineering Measures: Use in well ventilated area. Apply technical measures to comply with occupational exposure limits if needed.

Respiratory Measures: If airborne concentrations are above the permissible exposure limit, use NIOSH approved respirators.

Section 8 – Exposure Controls/Personal Protection (Continued)

Skin Protection: Wear protective gloves. Where extensive exposure to the product is possible, use resistant apron/suit and boots.

Eye/Face Protection: Goggles or safety glasses with side shields.

Other Protective Equipment: Ensure that eyewash stations and a safety shower are close to the workstation(s).

General Hygiene Considerations: Avoid prolonged contact with eyes, skin and clothing. Do not eat or drink when using this product. Wash hands after handling. Remove and wash all contaminated clothing before re-use. Handle in accordance with good industrial hygiene and safety practice.

Section 9 – Physical and Chemical Properties

Appearance: Clear light purple liquid.

Odor: Citrus Odor

Odor threshold: Not available

PH: 12.5 -13.8

Melting/Freezing pointing: ~ -3C (26.6F)

Boiling point and boiling range: >100C (212F)

Flash point: >93.3C (199.4F)

Evaporation point (Butyl Acetate=1): Not available.

Flammability (method determination): Not available.

Lower flammability limit (% by vol.): Not available.

Upper flammability limit (% by vol.): Not available.

Vapor pressure: Not available.

Vapor density: Not available.

Relative density: 1.00 – 1.05

Solubility in water: Complete.

Partition Coefficient (n-octanol/water): Not available.

Auto ignition temperature: Not available.

Decomposition temperature: Not available.

Viscosity: Not available.

Volatiles (% by wt) = 0%

Volatile organic compounds: Not available.

Other physical/chemical comments: No addition information.

Section 10 – Stability and Reactivity

Reactivity: Not normally reactive.

Chemical stability: Stable under normal conditions.

Section 10 – Stability and Reactivity (Continued)

Possibility of hazardous reactions: Hazardous polymerization does not occur.

Conditions to avoid: Heat. Contact with incompatible materials.

Incompatible materials: Strong oxidizers, Strong acids. Avoid contact with glass.

Hazardous decomposition products: Carbon oxides.

Section 11 – Toxicological Information

Information on routes of exposure:

Routes of entry - Inhalation: YES

Routes of entry - Skin & Eye: YES

Routes of entry - Ingestion: YES

Routes of entry - Skin Absorption: YES

Potential Health Effects:

Signs and symptoms of short term exposure:

Signs and symptoms: Inhalation – May cause respiratory irritation.

Signs and symptoms: Ingestion – Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Larger amounts may cause burns to the throat and esophagus.

Signs and symptoms: Skin – May cause irritation. Symptoms may include redness, edema, drying, defatting and cracking of the skin.

Signs and symptoms: Eyes – May cause serious irritation.

Potential Chronic Health Effects: None known.

Mutagenicity: Not hazardous by OSHA/WHMIS criteria.

Carcinogenicity: No components are listed as carcinogens by ACGIH, IARC, OSHA or NTP.

Reproductive effects: Not hazardous by OSHA/WHMIS criteria.

Sensitization to material: No data available to indicate product may be a sensitizer.

Specific target organ effects: Not Available.

Section 11 – Toxicological Information (Continued)

Medical conditions aggravated by overexposure: Pre-existing skin and eye conditions.

Toxicological data: The calculated ATE value for this mixture is well above classification parameters.

ATE (oral) = 21,690mg/kg

Chemical Name	LD50-Oral	Dermal
Sodium Metasilicate	847mg/kg (Rat)	Not Available
Sodium hydroxide	500mg/kg (Rabbit)	Not Available
Surfactant, blend	Not Available	Not Available

Section 12 – Ecological Information

Ecotoxicity: This product itself has not been tested.

Mobility in soil: This product itself has not been tested.

Persistence and degradability: This product itself has not been tested.

Bioaccumulation potential: This product itself has not been tested.

Other adverse environmental effects: None Known.

Section 13 – Disposal Information

Handling for disposal: Handle in accordance with good industrial hygiene and safety practice. Refer to protective measures listed in sections 7 and 8.

Methods of disposal: Dispose in accordance with all applicable federal, state, provincial and local regulation. Contact your federal, state, provincial and local authorities for specific rules.

Section 14 – Transportation Information

US 49 CFR/DOT. Ground Transportation

UN No.: UN3266
UN Proper shipping name: Corrosive liquid, basic, inorganic, N.O.S.,
(sodium hydroxide, sodium metasilicate).
Transport hazard class: 8
Packing group: II
ERG: 154

Special Transportation Notes: May be shipped as Limited Quantity by ground per provisions of CFR 49 173.154 (b).

Section 15 – Regulatory Information

US Federal Information:

TSCA: All listed ingredients appear on the Toxic Substances Control Act.

US CERCLA Reportable quantity (RQ): Sodium hydroxide 1,000 lbs.

SARA Title III: Sec. 302, Extremely Hazardous Substances, 40 CFR 355:

No extremely hazardous substances are present in this material.

SARA Title III: Sec. 311 and 312, MSDS Requirements, 40 CFR 370 Hazard Classes:

Reactive Hazard, Acute Health Hazard, Chronic Health Hazard. Under SARA Section 311 and 312, the EPA has established threshold quantities for the reporting of hazardous chemicals. The current thresholds are 500 pounds for the threshold planning quantity (TPQ), whichever is lower, for extremely hazardous substances and 10,000 pounds for all other hazardous chemicals.

SARA Title III: Sec. 313, Toxic Chemicals Notification, 40 CFR 372:

No components are present in this material.

State Regulations:

California Proposition 65: This product does not contain a chemical known to the State of California to cause, birth defects or other reproductive harm.

International Information:

Canadian Environmental Protection Act (CEPA) information: All ingredients listed appear on the Domestic Substances List (DSL).

Section 16 – Other Information

HMIS – Hazardous Materials Identification System

Health -2 Flammability -1 Physical Hazard -1 PPE –B

NFPA – National Fire Protection Association

Health -2 Flammability -1 Reactivity -1

Abbreviations legend:

ACGIH: American Conference of Governmental Industrial Hygienist

CAS: Chemical abstract Services

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980

CFR: Code of Federal Regulations

CSA: Canadian Standards Association

DOT: Department of Transportation

ECOTOX: U.S. EPA Ecotoxicology Database

EINECS: European Inventory of Existing Commercial chemical Substances

Section 16 – Other Information (Continued)

EPA: Environmental Protection agency
HSDB: Hazardous Substances database
IARC: International Agency for Research on Cancer
IBC: Intermediate Bulk Container
IUCLID: International Uniform Chemical Information Database
LC: Lethal Concentration
LD: Lethal Dose
NIOSH: National Institute of Occupational Safety and Health
NTP: National Toxicology Program
OECD: Organization for Economic Cooperation and Development
PEL: Permissible exposure limit
RCRA: Resource Conservation and Recovery Act
RTECS: Registry of Toxic Effects of Chemical Substances
SARA: Superfund Amendments and Reauthorization Act
SDS: Safety Data Sheet
STEL: Short Term Exposure Limit
TDG: Canadian Transportation of Dangerous Goods Act & Regulations
TLV: Threshold Limit Values
TWA: Time Weighted Average
WHMIS: Workplace Hazardous Materials Identification System

Disclaimer

The information continued herein is based on the manufactures' own study and the work of others, implied, as to the accuracy, completeness or adequacy of the information contained herein, and neither the provider nor the manufacturer (nor the agents, directors, officers, contractors or employees of either) are liable to any party for any damages of any nature, including direct, special or consequential damages arising out of or in connection with the accuracy, completeness, adequacy or furnishing of any information in this SDS, or in any other way related (directly or indirectly) to this SDS. The information provided on this SDS 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 guide for the safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as 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 material or in any other process.

Version: 1.0 – Initial Release

Version 2.0 – Corrected Pictogram Information

End of Document

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SECTION 1. IDENTIFICATION

Product name : DIESEL FUEL

Synonyms : Seasonal Diesel, #1 Diesel, #2 Heating Oil, #1 Heating Oil, D50, Arctic Diesel, Farm Diesel, Marine Diesel, Low Sulphur Diesel, LSD, Ultra Low Sulphur Diesel, ULSD, Mining Diesel, Naval Distillate, Dyed Diesel, Marked Diesel, Coloured Diesel, Furnace special, Biodiesel blend, B1, B2, B5, Diesel Low Cloud (LC), Marine Gas Oil, Marine Gas Oil Dyed.

Product code : 102762, 102763, 102755, 102302, 102744, 101801, 100678, 100677, 101802, 100107, 100668, 100658, 100911, 100663, 100652, 100460, 100065, 101796, 101793, 101795, 101792, 101794, 101791, 100768, 100643, 100642, 100103, 101798, 101800, 101797, 101788, 101789, 101787, 102531, 100734, 100733, 100640, 100997, 100995, 100732, 100731, 100994

Manufacturer or supplier's details
Petro-Canada
P.O. Box 2844, 150 - 6th Avenue South-West
Calgary Alberta T2P 3E3
Canada

Emergency telephone number
Suncor Energy: +1 403-296-3000;
Canutec Transportation: 1-888- 226-8832 (toll-free) or 613-996-6666;
Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : Diesel fuels are distillate fuels suitable for use in high and medium speed internal combustion engines of the compression ignition type. Mining diesels, marine diesels, MDO and naval distillates may have a higher flash point requirement.

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

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	Bright oily liquid.
Colour	Clear to yellow (This product may be dyed red for taxation purposes)
Odour	Mild petroleum oil like.

GHS Classification

Flammable liquids : Category 3

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- Acute toxicity (Inhalation) : Category 4
- Skin irritation : Category 2
- Carcinogenicity : Category 2
- Specific target organ toxicity - single exposure : Category 3 (Central nervous system)
- Specific target organ toxicity - repeated exposure : Category 2 (Liver, thymus, Bone)
- Aspiration hazard : Category 1

GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : Flammable liquid and vapour.
May be fatal if swallowed and enters airways.
Causes skin irritation.
Harmful if inhaled.
May cause drowsiness or dizziness.
Suspected of causing cancer.
May cause damage to organs (Liver, thymus, Bone) through prolonged or repeated exposure.

Precautionary statements : **Prevention:**
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Keep container tightly closed.
Ground and bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting/ equipment.
Use non-sparking tools.
Take action to prevent static discharges.
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
IF SWALLOWED: Immediately call a POISON CENTER/doctor.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
IF exposed or concerned: Get medical advice/ attention.

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Do NOT induce vomiting.
If skin irritation occurs: Get medical advice/ attention.
Take off contaminated clothing and wash it before reuse.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam 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/ container to an approved waste disposal plant.

Potential Health Effects

Primary Routes of Entry

: Eye contact
Ingestion
Inhalation
Skin contact
Skin Absorption

Target Organs

: Skin
Eyes
Respiratory Tract

Inhalation

: May cause respiratory tract irritation.
Inhalation may cause central nervous system effects.
Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness.

Skin

: Causes skin irritation.

Eyes

: Causes eye irritation.

Ingestion

: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.
Aspiration hazard if swallowed - can enter lungs and cause damage.

Aggravated Medical Condition

: None known.

Other hazards

None known.

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

Confirmed animal carcinogen with unknown relevance to humans

Fuel Oil No. 1

8008-20-6

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SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration
fuels, diesel	68334-30-5	70 - 100 %
fuel oil no. 2	68476-30-2	
kerosine (petroleum)	8008-20-6	
kerosine (petroleum), hydrodesulfurized	64742-81-0	
Alkanes, C10-20-branched and linear	928771-01-1	0 - 25 %
Soybean oil, Methyl ester	67784-80-9	0 - 5 %
Rape oil, Methyl ester	73891-99-3	
Fatty acids, tallow, Methyl esters	61788-61-2	

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 : None known.
- Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing
It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

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SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Dry chemical
Carbon dioxide (CO₂)
Water fog.
Foam
- Unsuitable extinguishing media : Do NOT use water jet.
- Specific hazards during fire-fighting : Cool closed containers exposed to fire with water spray.
- 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.
- Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.

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.
Use only with adequate ventilation.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity.
Avoid contact with skin, eyes and clothing.
Do not ingest.

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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

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
kerosine (petroleum)	8008-20-6	TWA	200 mg/m ³ (total hydrocarbon vapor)	CA BC OEL
		TWA	200 mg/m ³ (total hydrocarbon vapor)	CA AB OEL
		TWA	200 mg/m ³ (total hydrocarbon vapor)	ACGIH
kerosine (petroleum), hydrodesulfurized	64742-81-0	TWA	200 mg/m ³ (As total hydrocarbon vapour)	ACGIH
		TWA	200 mg/m ³ (As total hydrocarbon vapour)	ACGIH

Engineering measures : Use only in well-ventilated areas.
Ensure that eyewash station and safety shower are proximal to the work-station location.

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 cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstances where air-purifying respirators may not provide adequate protection.

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Hand protection Material	: neoprene, nitrile, polyvinyl alcohol (PVA), Viton(R). Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns. It should be realized that eventually any material regardless of their imperviousness, will get permeated by chemicals. Therefore, protective gloves should be regularly checked for wear and tear. At the first signs of hardening and cracks, they should be changed.
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.
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	: Bright oily liquid.
Colour	: Clear to yellow (This product may be dyed red for taxation purposes)
Odour	: Mild petroleum oil like.
Odour Threshold	: No data available
pH	: No data available
Pour point	: No data available
Boiling point/boiling range	: 150 - 371 °C (302 - 700 °F)
Flash point	: > 40 °C (104 °F) Method: closed cup
Auto-Ignition Temperature	: 225 °C (437 °F)
Evaporation rate	: No data available
Flammability	: Flammable in presence of open flames, sparks and heat. Va-

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pours are heavier than air and may travel considerable distance to sources of ignition and flash back. This product can accumulate static charge and ignite.

Upper explosion limit	: 6 %(V)
Lower explosion limit	: 0.7 %(V)
Vapour pressure	: 7.5 mmHg (20 °C / 68 °F)
Relative vapour density	: 4.5
Relative density	: 0.8 - 0.88
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: 1.3 - 4.1 cSt (40 °C / 104 °F)
Explosive properties	: Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Runoff to sewer may create fire or explosion hazard.

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	: Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	: Extremes of temperature and direct sunlight.
Incompatible materials	: Reactive with oxidising agents and acids.
Hazardous decomposition products	: May release CO _x , NO _x , SO _x , H ₂ S, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Eye contact
Ingestion
Inhalation
Skin contact
Skin Absorption

Acute toxicity

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Product:

- Acute oral toxicity : Remarks: No data available
- Acute inhalation toxicity : Remarks: No data available
- Acute dermal toxicity : Assessment: The substance or mixture has no acute dermal toxicity
Remarks: No data available

Components:

fuels, diesel:

- Acute oral toxicity : LD50 (Rat): 7,500 mg/kg,
- Acute dermal toxicity : LD50 (Mouse): 24,500 mg/kg,

fuel oil no. 2:

- Acute oral toxicity : LD50 (Rat): 12,000 mg/kg,
- Acute inhalation toxicity : LC50 (Rat): 4.1 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

kerosine (petroleum):

- Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg,
- Acute inhalation toxicity : LC50 (Rat): > 5 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
- Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg,

kerosine (petroleum), hydrosulfurized:

- Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg,
- Acute inhalation toxicity : LC50 (Rat): > 5.2 mg/l
Exposure time: 4 hrs
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

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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

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

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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.

Contaminated packaging : Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR

UN/ID No. : UN 1202
Proper shipping name : Diesel fuel
Class : 3
Packing group : III
Labels : Class 3 - Flammable Liquid
Packing instruction (cargo aircraft) : 366

IMDG-Code

UN number : UN 1202
Proper shipping name : DIESEL FUEL

Class : 3
Packing group : III
Labels : 3
EmS Code : F-E, S-E
Marine pollutant : no

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

National Regulations

TDG

UN number : UN 1202
Proper shipping name : DIESEL FUEL

Class : 3
Packing group : III
Labels : 3
ERG Code : 128
Marine pollutant : no

SECTION 15. REGULATORY INFORMATION

SAFETY DATA SHEET

DIESEL FUEL

000003000395



Version 3.1

Revision Date 2017/04/20

Print Date 2017/04/20

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

SECTION 16. OTHER INFORMATION

For Copy of SDS : Internet: www.petro-canada.ca/msds
Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228
For Product Safety Information: 1 905-804-4752

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

Revision Date : 2017/04/20

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.

SAFETY DATA SHEET

GASOLINE, UNLEADED



000003000644

Version 2.0

Revision Date 2017/04/20

Print Date 2017/04/20

SECTION 1. IDENTIFICATION

Product name : GASOLINE, UNLEADED

Synonyms : Regular, Unleaded Gasoline (US Grade), Mid-Grade, Plus, Super, WinterGas, SummerGas, Supreme, SuperClean, SuperClean WinterGas, RegularClean, PlusClean, Premium, marked or dyed gasoline, TQRUL, transitional quality regular unleaded, BOB, Blendstock for Oxygenate Blending, Conventional Gasoline, RUL, MUL, SUL, PUL.

Product code : 100127, 100126, 101823, 100507, 101811, 101814, 100141, 101813, 101810, 101812, 100063, 101822, 100138, 101821, 100064, 101820, 101819, 100506, 101818, 101816, 101817, 100488

Manufacturer or supplier's details
Petro-Canada
P.O. Box 2844, 150 - 6th Avenue South-West
Calgary Alberta T2P 3E3
Canada

Emergency telephone number
Suncor Energy: +1 403-296-3000;
Canutec Transportation: 1-888- 226-8832 (toll-free) or 613-996-6666;
Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : Unleaded gasoline is used in spark ignition engines including motor vehicles, inboard and outboard boat engines, small engines such as chain saws and lawn mowers, and recreational vehicles.

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

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	Clear liquid.
Colour	Clear to slightly yellow or green, undyed liquid. May be dyed red for taxation purposes.
Odour	Gasoline

GHS Classification

Flammable liquids : Category 1

Skin irritation : Category 2

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- Germ cell mutagenicity : Category 1B
- Carcinogenicity : Category 1A
- Reproductive toxicity : Category 2
- Specific target organ toxicity - single exposure : Category 3 (Central nervous system)
- Specific target organ toxicity - repeated exposure : Category 1
- Aspiration hazard : Category 1

GHS label elements

- Hazard pictograms : 

- Signal word : Danger

- Hazard statements : Extremely flammable liquid and vapour.
May be fatal if swallowed and enters airways.
Causes skin irritation.
May cause drowsiness or dizziness.
May cause genetic defects.
May cause cancer.
Suspected of damaging the unborn child.
Causes damage to organs () through prolonged or repeated exposure.

- Precautionary statements : **Prevention:**
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting/ equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
IF SWALLOWED: Immediately call a POISON CENTER/doctor.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable

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GASOLINE, UNLEADED



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for breathing. Call a POISON CENTER/doctor if you feel unwell.
IF exposed or concerned: Get medical advice/ attention.
Do NOT induce vomiting.
If skin irritation occurs: Get medical advice/ attention.
Take off contaminated clothing and wash before reuse.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam 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/ container to an approved waste disposal plant.

Potential Health Effects

Primary Routes of Entry	: Eye contact Ingestion Inhalation Skin contact
Target Organs	: Blood Immune system
Inhalation	: Inhalation may cause central nervous system effects. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness.
Skin	: Causes skin irritation.
Eyes	: May irritate eyes.
Ingestion	: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. Aspiration hazard if swallowed - can enter lungs and cause damage.
Chronic Exposure	: Chronic exposure to benzene may result in increased risk of leukemia and other blood disorders.
Aggravated Medical Condition	: None known.

Other hazards

None known.

IARC

Group 1: Carcinogenic to humans

Benzene 71-43-2

OSHA

OSHA specifically regulated carcinogen

Benzene 71-43-2

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NTP

Known to be human carcinogen

Benzene

71-43-2

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration
gasoline, natural	8006-61-9	95 - 100 %
toluene	108-88-3	1 - 40 %
benzene	71-43-2	0.5 - 1.5 %
ethanol	64-17-5	0.1 - 0.3 %

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 : None known.
- Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing
It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

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SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Dry chemical
Carbon dioxide (CO₂)
Water fog.
Foam
- Unsuitable extinguishing media : Do NOT use water jet.
- Specific hazards during fire-fighting : Cool closed containers exposed to fire with water spray.
- Hazardous combustion products : Carbon oxides (CO, CO₂), nitrogen oxides (NO_x), polynuclear aromatic hydrocarbons, phenols, aldehydes, ketones, 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.
Use only with adequate ventilation.
In case of insufficient ventilation, wear suitable respiratory equipment.
Avoid spark promoters. Ground/bond container and equipment. These alone may be insufficient to remove static electricity.
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.

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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

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis		
gasoline, natural	8006-61-9	TWA	300 ppm 900 mg/m ³	OSHA P0		
		STEL	500 ppm 1,500 mg/m ³	OSHA P0		
		TWA	500 ppm 2,000 mg/m ³	OSHA Z-1		
		STEL	500 ppm 1,500 mg/m ³	CAL PEL		
		PEL	300 ppm 900 mg/m ³	CAL PEL		
toluene	108-88-3	TWA	20 ppm	ACGIH		
		TWA	100 ppm 375 mg/m ³	NIOSH REL		
		ST	150 ppm 560 mg/m ³	NIOSH REL		
		TWA	200 ppm	OSHA Z-2		
		CEIL	300 ppm	OSHA Z-2		
		Peak	500 ppm (10 minutes)	OSHA Z-2		
		TWA	100 ppm 375 mg/m ³	OSHA P0		
		STEL	150 ppm 560 mg/m ³	OSHA P0		
		PEL	10 ppm 37 mg/m ³	CAL PEL		
		C	500 ppm	CAL PEL		
		STEL	150 ppm 560 mg/m ³	CAL PEL		
		benzene	71-43-2	TWA	0.5 ppm	ACGIH
				STEL	2.5 ppm	ACGIH
TWA	0.1 ppm			NIOSH REL		
ST	1 ppm			NIOSH REL		
TWA	10 ppm			OSHA Z-2		
CEIL	25 ppm			OSHA Z-2		
Peak	50 ppm (10 minutes)			OSHA Z-2		
PEL	1 ppm			OSHA CARC		
STEL	5 ppm			OSHA CARC		

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		PEL	1 ppm	CAL PEL
		STEL	5 ppm	CAL PEL
ethanol	64-17-5	TWA	1,000 ppm 1,900 mg/m3	NIOSH REL
		TWA	1,000 ppm 1,900 mg/m3	OSHA Z-1
		TWA	1,000 ppm 1,900 mg/m3	OSHA P0
		STEL	1,000 ppm	ACGIH
		PEL	1,000 ppm 1,900 mg/m3	CAL PEL

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sam-pling time	Permissible concentra-tion	Basis
Toluene	108-88-3	Toluene	In blood	Prior to last shift of work-week	0.02 mg/l	ACGIH BEI
		Toluene	Urine	End of shift (As soon as possible after exposure ceases)	0.03 mg/l	ACGIH BEI

Engineering measures : Use only in well-ventilated areas.
Ensure that eyewash station and safety shower are proximal to the work-station location.

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 : A NIOSH-approved air-purifying respirator with an organic vapour cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection
Material : polyvinyl alcohol (PVA), Viton(R). Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns. It should be realized that eventually any material regardless of their imperviousness,

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will get permeated by chemicals. Therefore, protective gloves should be regularly checked for wear and tear. At the first signs of hardening and cracks, they should be changed.

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.
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	: Clear liquid.
Colour	: Clear to slightly yellow or green, undyed liquid. May be dyed red for taxation purposes.
Odour	: Gasoline
Odour Threshold	: No data available
pH	: No data available
Pour point	: No data available
Boiling point/boiling range	: 25 - 225 °C (77 - 437 °F)
Flash point	: -50 - -38 °C (-58 - -36 °F) Method: Tagliabue.
Auto-Ignition Temperature	: 257 °C (495 °F)
Evaporation rate	: No data available
Flammability	: Extremely flammable in presence of open flames, sparks, shocks, and heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. Rapid escape of vapour may generate static charge causing ignition. May accumulate in confined spaces.
Upper explosion limit	: 7.6 %(V)

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Lower explosion limit	:	1.3 %(V)
Vapour pressure	:	< 802.5 mmHg (20 °C / 68 °F)
Relative vapour density	:	3
Relative density	:	0.685 - 0.8
Solubility(ies)		
Water solubility	:	insoluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity		
Explosive properties	:	Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Containers may explode in heat of fire. Vapours may form explosive mixtures with air.

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	:	Hazardous polymerisation does not occur. Stable under normal conditions.
Conditions to avoid	:	Extremes of temperature and direct sunlight.
Incompatible materials	:	Reactive with oxidising agents, acids and interhalogens.
Hazardous decomposition products	:	May release CO _x , NO _x , phenols, polycyclic aromatic hydrocarbons, aldehydes, ketones, 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

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Components:

toluene:

- Acute oral toxicity : LD50 (Rat): 5,580 mg/kg,
- Acute inhalation toxicity : LC50 (Rat): 7585 ppm
Exposure time: 4 h
Test atmosphere: dust/mist
- Acute dermal toxicity : LD50 (Rabbit): 12,125 mg/kg,

benzene:

- Acute oral toxicity : LD50 (Rat): 2,990 mg/kg,
- Acute inhalation toxicity : LC50 (Rat): 13700 ppm
Exposure time: 4 h
Test atmosphere: dust/mist
- Acute dermal toxicity : LD50 (Rabbit): > 8,240 mg/kg,

ethanol:

- Acute oral toxicity : LD50 (Rat): 7,060 mg/kg,
- Acute inhalation toxicity : LC50 (Rat): > 32380 ppm
Exposure time: 4 h
Test atmosphere: vapour

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

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STOT - repeated exposure

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.
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.

Contaminated packaging : Do not re-use empty containers.

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SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR

UN/ID No. : UN 1203
Proper shipping name : Gasoline
Class : 3
Packing group : II
Labels : Class 3 - Flammable Liquid
Packing instruction (cargo aircraft) : 364

IMDG-Code

UN number : UN 1203
Proper shipping name : GASOLINE

Class : 3
Packing group : II
Labels : 3
EmS Code : F-E, S-E
Marine pollutant : no

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

National Regulations

49 CFR

UN/ID/NA number : UN 1203
Proper shipping name : Gasoline

Class : 3
Packing group : II
Labels : Class 3 - Flammable Liquid
ERG Code : 128
Marine pollutant : no

SECTION 15. REGULATORY INFORMATION

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

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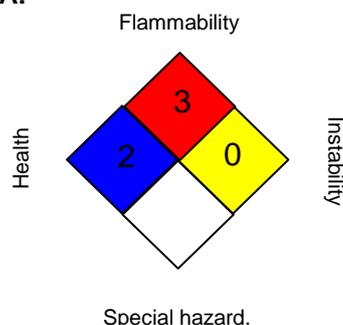
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SECTION 16. OTHER INFORMATION

Further information

NFPA:



HMIS III:

HEALTH	3*
FLAMMABILITY	3
PHYSICAL HAZARD	0
PERSONAL PROTECTION	H

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

For Copy of SDS

: Internet: www.petro-canada.ca/msds
Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228
For Product Safety Information: 1 905-804-4752

Prepared by

: Product Safety: +1 905-804-4752

Revision Date

: 2017/04/20

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.

SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: CAT HYDRAULIC OIL (HYDO) SAE 10W
Product Description: Base Oil and Additives
Product Code: 20202050B020, 478909-00, 971670
Intended Use: Hydraulic/transmission fluid

COMPANY IDENTIFICATION

Supplier: EXXON MOBIL CORPORATION
3225 GALLOWS RD.
FAIRFAX, VA. 22037 USA

24 Hour Health Emergency: 609-737-4411
Transportation Emergency Phone: 800-424-9300 or 703-527-3887 CHEMTREC
Product Technical Information: 800-662-4525
MSDS Internet Address: <http://www.exxon.com>, <http://www.mobil.com>

SECTION 2 HAZARDS IDENTIFICATION

This material is not hazardous according to regulatory guidelines (see (M)SDS Section 15).

Other hazard information:

HAZARD NOT OTHERWISE CLASSIFIED (HNOC): None as defined under 29 CFR 1900.1200.

PHYSICAL / CHEMICAL HAZARDS

No significant hazards.

HEALTH HAZARDS

High-pressure injection under skin may cause serious damage. Excessive exposure may result in eye, skin, or respiratory irritation.

ENVIRONMENTAL HAZARDS

No significant hazards.

NFPA Hazard ID:	Health: 0	Flammability: 1	Reactivity: 0
HMIS Hazard ID:	Health: 0	Flammability: 1	Reactivity: 0

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert

Product Name: CAT HYDRAULIC OIL (HYDO) SAE 10W

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advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3	COMPOSITION / INFORMATION ON INGREDIENTS
------------------	---

This material is defined as a mixture.

Hazardous Substance(s) or Complex Substance(s) required for disclosure

Name	CAS#	Concentration*	GHS Hazard Codes
ZINC DITHIOPHOSPHATE	68649-42-3	1 - 2.5%	H315, H318, H401, H411

* All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

As per paragraph (i) of 29 CFR 1910.1200, formulation is considered a trade secret and specific chemical identity and exact percentage (concentration) of composition may have been withheld. Specific chemical identity and exact percentage composition will be provided to health professionals, employees, or designated representatives in accordance with applicable provisions of paragraph (i).

SECTION 4	FIRST AID MEASURES
------------------	---------------------------

INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

SKIN CONTACT

Wash contact areas with soap and water. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

INGESTION

First aid is normally not required. Seek medical attention if discomfort occurs.

SECTION 5	FIRE FIGHTING MEASURES
------------------	-------------------------------

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

Inappropriate Extinguishing Media: Straight Streams of Water

FIRE FIGHTING

Product Name: CAT HYDRAULIC OIL (HYDO) SAE 10W

Revision Date: 02 Mar 2015

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Fire Fighting Instructions: Evacuate area. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Firefighters should use standard protective equipment and in enclosed spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

Unusual Fire Hazards: Pressurized mists may form a flammable mixture.

Hazardous Combustion Products: Aldehydes, Oxides of carbon, Smoke, Fume, Sulfur oxides, Incomplete combustion products

FLAMMABILITY PROPERTIES

Flash Point [Method]: >200°C (392°F) [ASTM D-92]

Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0

Autoignition Temperature: N/D

SECTION 6

ACCIDENTAL RELEASE MEASURES

NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. The National Response Center can be reached at (800)424-8802.

PROTECTIVE MEASURES

Avoid contact with spilled material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for advice on the minimum requirements for personal protective equipment. Additional protective measures may be necessary, depending on the specific circumstances and/or the expert judgment of the emergency responders.

For emergency responders: Respiratory protection: respiratory protection will be necessary only in special cases, e.g., formation of mists. Half-face or full-face respirator with filter(s) for dust/organic vapor or Self Contained Breathing Apparatus (SCBA) can be used depending on the size of spill and potential level of exposure. If the exposure cannot be completely characterized or an oxygen deficient atmosphere is possible or anticipated, SCBA is recommended. Work gloves that are resistant to hydrocarbons are recommended. Gloves made of polyvinyl acetate (PVA) are not water-resistant and are not suitable for emergency use. Chemical goggles are recommended if splashes or contact with eyes is possible. Small spills: normal antistatic work clothes are usually adequate. Large spills: full body suit of chemical resistant, antistatic material is recommended.

SPILL MANAGEMENT

Land Spill: Stop leak if you can do it without risk. Recover by pumping or with suitable absorbent.

Water Spill: Stop leak if you can do it without risk. Confine the spill immediately with booms. Warn other shipping. Remove from the surface by skimming or with suitable absorbents. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

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ENVIRONMENTAL PRECAUTIONS

Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

SECTION 7

HANDLING AND STORAGE

HANDLING

Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source). When the material is handled in bulk, an electrical spark could ignite any flammable vapors from liquids or residues that may be present (e.g., during switch-loading operations). Use proper bonding and/or ground procedures. However, bonding and grounds may not eliminate the hazard from static accumulation. Consult local applicable standards for guidance. Additional references include American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practice on Static Electricity) or CENELEC CLC/TR 50404 (Electrostatics - Code of practice for the avoidance of hazards due to static electricity).

Static Accumulator: This material is a static accumulator.

STORAGE

The container choice, for example storage vessel, may effect static accumulation and dissipation. Do not store in open or unlabelled containers. Keep away from incompatible materials.

SECTION 8

EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits/standards for materials that can be formed when handling this product: When mists/aerosols can occur the following are recommended: 5 mg/m³ - ACGIH TLV (inhalable fraction), 5 mg/m³ - OSHA PEL.

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

No biological limits allocated.

ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

No special requirements under ordinary conditions of use and with adequate ventilation.

PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

Respiratory Protection: If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to

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be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

Hand Protection: Any specific glove information provided is based on published literature and glove manufacturer data. Glove suitability and breakthrough time will differ depending on the specific use conditions. Contact the glove manufacturer for specific advice on glove selection and breakthrough times for your use conditions. Inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

No protection is ordinarily required under normal conditions of use.

Eye Protection: If contact is likely, safety glasses with side shields are recommended.

Skin and Body Protection: Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

No skin protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid skin contact.

Specific Hygiene Measures: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

ENVIRONMENTAL CONTROLS

Comply with applicable environmental regulations limiting discharge to air, water and soil. Protect the environment by applying appropriate control measures to prevent or limit emissions.

SECTION 9

PHYSICAL AND CHEMICAL PROPERTIES

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Liquid

Color: Amber

Odor: Characteristic

Odor Threshold: N/D

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 15 °C): 0.878

Flammability (Solid, Gas): N/A

Flash Point [Method]: >200°C (392°F) [ASTM D-92]

Flammable Limits (Approximate volume % in air): LEL: 0.9 UEL: 7.0

Autoignition Temperature: N/D

Boiling Point / Range: > 316°C (600°F) [Estimated]

Decomposition Temperature: N/D

Vapor Density (Air = 1): > 2 at 101 kPa [Estimated]

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Vapor Pressure: < 0.013 kPa (0.1 mm Hg) at 20 °C [Estimated]

Evaporation Rate (n-butyl acetate = 1): N/D

pH: N/A

Log Pow (n-Octanol/Water Partition Coefficient): > 3.5 [Estimated]

Solubility in Water: Negligible

Viscosity: 37.7 cSt (37.7 mm²/sec) at 40 °C | 6.1 cSt (6.1 mm²/sec) at 100°C

Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D

Melting Point: N/A

Pour Point: -18°C (0°F)

DMSO Extract (mineral oil only), IP-346: < 3 %wt

SECTION 10	STABILITY AND REACTIVITY
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REACTIVITY: See sub-sections below.

STABILITY: Material is stable under normal conditions.

CONDITIONS TO AVOID: Excessive heat. High energy sources of ignition.

MATERIALS TO AVOID: Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS: Material does not decompose at ambient temperatures.

POSSIBILITY OF HAZARDOUS REACTIONS: Hazardous polymerization will not occur.

SECTION 11	TOXICOLOGICAL INFORMATION
-------------------	----------------------------------

INFORMATION ON TOXICOLOGICAL EFFECTS

Hazard Class	Conclusion / Remarks
Inhalation	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Irritation: No end point data for material.	Negligible hazard at ambient/normal handling temperatures.
Ingestion	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin	
Acute Toxicity: No end point data for material.	Minimally Toxic. Based on assessment of the components.
Skin Corrosion/Irritation: No end point data for material.	Negligible irritation to skin at ambient temperatures. Based on assessment of the components.
Eye	
Serious Eye Damage/Irritation: No end point data for material.	May cause mild, short-lasting discomfort to eyes. Based on assessment of the components.
Sensitization	
Respiratory Sensitization: No end point data	Not expected to be a respiratory sensitizer.

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for material.	
Skin Sensitization: No end point data for material.	Not expected to be a skin sensitizer. Based on assessment of the components.
Aspiration: Data available.	Not expected to be an aspiration hazard. Based on physico-chemical properties of the material.
Germ Cell Mutagenicity: No end point data for material.	Not expected to be a germ cell mutagen. Based on assessment of the components.
Carcinogenicity: No end point data for material.	Not expected to cause cancer. Based on assessment of the components.
Reproductive Toxicity: No end point data for material.	Not expected to be a reproductive toxicant. Based on assessment of the components.
Lactation: No end point data for material.	Not expected to cause harm to breast-fed children.
Specific Target Organ Toxicity (STOT)	
Single Exposure: No end point data for material.	Not expected to cause organ damage from a single exposure.
Repeated Exposure: No end point data for material.	Not expected to cause organ damage from prolonged or repeated exposure. Based on assessment of the components.

OTHER INFORMATION

Contains:

Base oil severely refined: Not carcinogenic in animal studies. Representative material passes IP-346, Modified Ames test, and/or other screening tests. Dermal and inhalation studies showed minimal effects; lung non-specific infiltration of immune cells, oil deposition and minimal granuloma formation. Not sensitizing in test animals.

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = NTP CARC

2 = NTP SUS

3 = IARC 1

4 = IARC 2A

5 = IARC 2B

6 = OSHA CARC

SECTION 12	ECOLOGICAL INFORMATION
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The information given is based on data available for the material, the components of the material, and similar materials.

ECOTOXICITY

Material -- Not expected to be harmful to aquatic organisms.

MOBILITY

Base oil component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Base oil component -- Expected to be inherently biodegradable

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BIOACCUMULATION POTENTIAL

Base oil component -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

SECTION 13

DISPOSAL CONSIDERATIONS

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

DISPOSAL RECOMMENDATIONS

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products. Protect the environment. Dispose of used oil at designated sites. Minimize skin contact. Do not mix used oils with solvents, brake fluids or coolants.

REGULATORY DISPOSAL INFORMATION

RCRA Information: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed as hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

Empty Container Warning Empty Container Warning (where applicable): Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately reconditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. **DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.**

SECTION 14

TRANSPORT INFORMATION

LAND (DOT): Not Regulated for Land Transport

LAND (TDG): Not Regulated for Land Transport

SEA (IMDG): Not Regulated for Sea Transport according to IMDG-Code

Marine Pollutant: No

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AIR (IATA): Not Regulated for Air Transport

SECTION 15	REGULATORY INFORMATION
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OSHA HAZARD COMMUNICATION STANDARD: This material is not considered hazardous in accordance with OSHA HazCom 2012, 29 CFR 1910.1200.

Listed or exempt from listing/notification on the following chemical inventories: AICS, DSL, ENCS, IECSC, KECI, PICCS, TSCA

EPCRA SECTION 302: This material contains no extremely hazardous substances.

SARA (311/312) REPORTABLE HAZARD CATEGORIES: None.

SARA (313) TOXIC RELEASE INVENTORY:

Chemical Name	CAS Number	Typical Value
ZINC DITHIOPHOSPHATE	68649-42-3	1 - 2.5%

The following ingredients are cited on the lists below:

Chemical Name	CAS Number	List Citations
ZINC DITHIOPHOSPHATE	68649-42-3	13, 15, 17, 19

--REGULATORY LISTS SEARCHED--

- | | | | |
|---------------|------------------|-------------------|-------------|
| 1 = ACGIH ALL | 6 = TSCA 5a2 | 11 = CA P65 REPRO | 16 = MN RTK |
| 2 = ACGIH A1 | 7 = TSCA 5e | 12 = CA RTK | 17 = NJ RTK |
| 3 = ACGIH A2 | 8 = TSCA 6 | 13 = IL RTK | 18 = PA RTK |
| 4 = OSHA Z | 9 = TSCA 12b | 14 = LA RTK | 19 = RI RTK |
| 5 = TSCA 4 | 10 = CA P65 CARC | 15 = MI 293 | |

Code key: CARC=Carcinogen; REPRO=Reproductive

SECTION 16	OTHER INFORMATION
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N/D = Not determined, N/A = Not applicable

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):

- H315: Causes skin irritation; Skin Corr/Irritation, Cat 2
- H318: Causes serious eye damage; Serious Eye Damage/Irr, Cat 1
- H401: Toxic to aquatic life; Acute Env Tox, Cat 2
- H411: Toxic to aquatic life with long lasting effects; Chronic Env Tox, Cat 2

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THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:

Updates made in accordance with implementation of GHS requirements.

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Internal Use Only

MHC: 0B, 0B, 0, 0, 0, 0

PPEC: A

DGN: 2004671XUS (546411)

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Material Safety Data Sheet

TWO CYCLE MOTOR OIL



000003000604

Version 2.0

Revision Date 2014/08/08

Print Date 2014/08/08

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : TWO CYCLE MOTOR OIL

Product code : TWOCYCDRM, TWOCYCC12, TWOCYC, TWOCYCBLK

Manufacturer or supplier's details

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

Petro-Canada America Lubricants Inc.
115N Oak Park Avenue #1C
Oak Park IL 60301-1366
United States

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 low ash 2-cycle engine oil designed to lubricate conventional pre-mixed fuel/oil as well as oil injection lubricated engines powering air-cooled two-stroke cycle engines.

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

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Form	viscous liquid
Colour	Blue-green.
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.

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

Pure 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 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 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

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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), nitrogen oxides (NO_x), sulphur oxides (SO_x), phosphorus oxides (PO_x), hydrocarbons, aldehydes, smoke and irritating vapours as products of incomplete combustion.
 - Specific extinguishing methods : 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.

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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.
Adequate ventilation to ensure that Occupational Exposure Limits are not exceeded.

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.
Recommended Filter type:

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 if splashing hazard is likely.

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 : Blue-green.

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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	: 149 °C (300 °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
Density	: 0.8508 kg/l (15 °C / 59 °F)
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: 37.1 cSt (40 °C / 104 °F) 7.03 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. No dangerous reaction known under conditions of normal use.
Conditions to avoid	: No data available
Incompatible materials	: Reactive with oxidising agents, reducing agents, and acids.
Hazardous decomposition	: May release COx, NOx, SOx, aldehydes, methacrylate

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products

monomers, hydrocarbons, smoke and irritating vapours when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

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:

Result: Mild skin irritation

Serious eye damage/eye irritation

Product:

Result: Mild 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

Internet: lubricants.petro-canada.ca/msds
Petro-Canada is a Suncor Energy business.

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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

No data available

Bioaccumulative potential

Product:

Partition coefficient: n-octanol/water : Remarks: No data available

Mobility in soil

No data available

Other adverse effects

No data available

Product:

Additional ecological information : 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.

Contaminated packaging : Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

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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

OSHA Hazards : This material is non-hazardous as defined by the American OSHA Hazard Communication Standard.

WHMIS Classification : Not Rated

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.

ELINCS At least one component is not listed in EINECS but all such components are listed in ELINCS.

IECSC On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

Material Safety Data Sheet

TWO CYCLE MOTOR OIL



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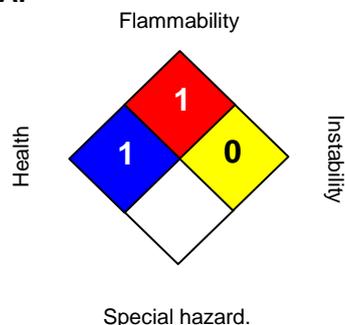
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Further information

NFPA:



HMIS III:

HEALTH	1
FLAMMABILITY	1
PHYSICAL HAZARD	0
PERSONAL PROTECTION	B

0 = not significant, 1 = Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

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

United States, telephone: 1-800-268-5850; 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.

Safety Data Sheet



SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Delo 400 LE Synthetic SAE 5W-40

Product Use: Diesel Engine Oil

Product Number(s): 271207

Company Identification

Chevron Canada Limited

1050 West Pender

Vancouver, BC V6E 3T4

Canada

www.chevronlubricants.com

Transportation Emergency Response

CHEMTREC: (800) 424-9300 or (703) 527-3887

Health Emergency

Chevron Emergency Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623

Product Information

email : lubemsds@chevron.com

Product Information: (800) LUBE TEK

SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION: Not classified as hazardous according to Canada regulatory guidelines.

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

Revision Number: 5

Revision Date: OCTOBER 07, 2015

1 of 9

Delo 400 LE Synthetic SAE 5W-40

SDS : 25282

COMPONENTS	CAS NUMBER	AMOUNT
Highly refined mineral oil (C15 - C50)	Mixture	60 - 65 %weight
Zinc dialkyldithiophosphate	68649-42-3	0.1 - < 2.5 %weight
Phenol, dodecyl-, branched	121158-58-5	0.1 - < 1.5 %weight

Information on ingredients that are considered Controlled Products and/or that appear on the WHMIS Ingredient Disclosure List (IDL) is provided as required by the Canadian Hazardous Products Act (HPA, Sections 13 and 14). Ingredients considered hazardous under the OSHA Hazard Communication Standard, 29 CFR 1910.1200, are also listed. See Section 15 for additional regulatory information.

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye: No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.

Skin: To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

Ingestion: No specific first aid measures are required. Do not induce vomiting. As a precaution, get medical advice.

Inhalation: No specific first aid measures are required. If exposed to excessive levels of material in the air, move the exposed person to fresh air. Get medical attention if coughing or respiratory discomfort occurs.

Most important symptoms and effects, both acute and delayed

IMMEDIATE HEALTH EFFECTS

Eye: Not expected to cause prolonged or significant eye irritation.

Skin: Contact with the skin is not expected to cause prolonged or significant irritation. Contact with the skin is not expected to cause an allergic skin response. Not expected to be harmful to internal organs if absorbed through the skin.

Ingestion: Not expected to be harmful if swallowed.

Inhalation: Not expected to be harmful if inhaled. Contains a petroleum-based mineral oil. May cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of oil mist at airborne levels above the recommended mineral oil mist exposure limit. Symptoms of respiratory irritation may include coughing and difficulty breathing.

Indication of any immediate medical attention and special treatment needed Not Applicable

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

PROTECTION OF FIRE FIGHTERS:

Fire Fighting Instructions: This material will burn although it is not easily ignited. See Section 7 for proper handling and storage. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in vicinity of spilled material.

Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.

Reporting: Report spills to local authorities as appropriate or required.

SECTION 7 HANDLING AND STORAGE

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Precautionary Measures: Keep out of the reach of children.

Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures.

Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:

Use in a well-ventilated area.

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.

Skin Protection: No special protective clothing is normally required. Where splashing is possible, select protective clothing depending on operations conducted, physical requirements and other substances in the workplace. Suggested materials for protective gloves include: 4H (PE/EVAL), Nitrile Rubber, Silver Shield, Viton.

Respiratory Protection: No respiratory protection is normally required.

If user operations generate an oil mist, determine if airborne concentrations are below the occupational exposure limit for mineral oil mist. If not, wear an approved respirator that provides adequate protection from the measured concentrations of this material. For air-purifying respirators use a particulate cartridge. Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Country/ Agency	TWA	STEL	Ceiling	Notation
Highly refined mineral oil (C15 - C50)	ACGIH	5 mg/m3	10 mg/m3	--	--
Highly refined mineral oil (C15 - C50)	ACGIH	5 mg/m3	10 mg/m3	--	--

NOTE ON OCCUPATIONAL EXPOSURE LIMITS: Consult local authorities for acceptable provincial values in Canada. Consult the Canadian Standards Association Standard 94.4-2002 Selection, Use and Care of Respirators.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

Color: Amber

Physical State: Liquid



Odor: Petroleum odor
Odor Threshold: No data available
pH: No data available
Vapor Pressure: <0.01 mmHg Maximum @ 37.8 °C (100 °F)
Vapor Density (Air = 1): >1 Minimum
Initial Boiling Point: No data available
Solubility: Soluble in hydrocarbons; insoluble in water
Freezing Point: Not Applicable
Melting Point: No data available
Density: 0.8590 kg/l @ 15°C (59°F) (Typical)
Viscosity: 14 mm²/s @ 100°C (212°F) Minimum
Coefficient of Therm. Expansion / °F: No data available
Evaporation Rate: No data available
Decomposition temperature: No data available
Octanol/Water Partition Coefficient: No data available

FLAMMABLE PROPERTIES:

Flammability (solid, gas): No Data Available

Flashpoint: (Cleveland Open Cup) 200 °C (392 °F) Minimum

Autoignition: No data available

Flammability (Explosive) Limits (% by volume in air): Lower: Not Applicable Upper: Not Applicable

SECTION 10 STABILITY AND REACTIVITY

Reactivity: May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Incompatibility With Other Materials: Not applicable

Hazardous Decomposition Products: None known (None expected)

Hazardous Polymerization: Hazardous polymerization will not occur.

Sensitivity to Mechanical Impact: No.

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Serious Eye Damage/Irritation: The eye irritation hazard is based on evaluation of data for product components.

Skin Corrosion/Irritation: The skin irritation hazard is based on evaluation of data for product components.

Skin Sensitization: The skin sensitization hazard is based on evaluation of data for product components.

Acute Dermal Toxicity: The acute dermal toxicity hazard is based on evaluation of data for product components.

Acute Oral Toxicity: The acute oral toxicity hazard is based on evaluation of data for product components.

Acute Inhalation Toxicity: The acute inhalation toxicity hazard is based on evaluation of data for product components.

Acute Toxicity Estimate: Not Determined

Germ Cell Mutagenicity: The hazard evaluation is based on data for components or a similar material.

Carcinogenicity: The hazard evaluation is based on data for components or a similar material.

Reproductive Toxicity: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Single Exposure: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Repeated Exposure: The hazard evaluation is based on data for components or a similar material.

ADDITIONAL TOXICOLOGY INFORMATION:

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

These oils have not been classified by the American Conference of Governmental Industrial Hygienists (ACGIH) as: confirmed human carcinogen (A1), suspected human carcinogen (A2), or confirmed animal carcinogen with unknown relevance to humans (A3).

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY

This material is not expected to be harmful to aquatic organisms.

The product has not been tested. The statement has been derived from the properties of the individual components.

MOBILITY

No data available.

PERSISTENCE AND DEGRADABILITY

This material is not expected to be readily biodegradable. The biodegradability of this material is based on an evaluation of data for the components or a similar material.

The product has not been tested. The statement has been derived from the properties of the individual components.

POTENTIAL TO BIOACCUMULATE

Bioconcentration Factor: No data available.

Octanol/Water Partition Coefficient: No data available

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. Oil collection services are available for used oil recycling or disposal. Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods. (See B.C. Reg. GY/92 Waste Management Act; R.R.O. 1990, Reg. 347 General-Waste Management; C.C.S.M.c. W40 The Waste Reduction and Prevention Act; N.S. Reg. 51/95 and N.S. Reg. 179/96 for examples of Provincial legislation.)

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

TC Shipping Description: NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER TRANSPORT CANADA (TDG)

IMO/IMDG Shipping Description: NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER THE IMDG CODE

ICAO/IATA Shipping Description: NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER ICAO

DOT Shipping Description: NOT REGULATED AS A HAZARDOUS MATERIAL UNDER 49 CFR

SECTION 15 REGULATORY INFORMATION

REGULATORY LISTS SEARCHED:

- | | |
|---------------------|----------------------|
| 01-1=IARC Group 1 | 03=EPCRA 313 |
| 01-2A=IARC Group 2A | 04=CA Proposition 65 |
| 01-2B=IARC Group 2B | 05=MA RTK |
| 02=NTP Carcinogen | 06=NJ RTK |
| | 07=PA RTK |

No components of this material were found on the regulatory lists above.

CHEMICAL INVENTORIES:

All components comply with the following chemical inventory requirements: AICS (Australia), DSL (Canada), KECl (Korea), PICCS (Philippines), TSCA (United States).

One or more components is listed on ELINCS (European Union). Secondary notification by the importer may be required. All other components are listed or exempted from listing on EINECS.

One or more components does not comply with the following chemical inventory requirements: ENCS (Japan), IECSC (China).

SECTION 16 OTHER INFORMATION

REVISION STATEMENT: This revision updates the following sections of this Material Safety Data Sheet: 1-16

Revision Date: OCTOBER 07, 2015

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
GHS - Globally Harmonized System	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Governmental Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	SDS - Safety Data Sheet
HMIS - Hazardous Materials Information System	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration
NCEL - New Chemical Exposure Limit	EPA - Environmental Protection Agency
SCBA - Self-Contained Breathing Apparatus	

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Safety Data Sheet



SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Chevron Supreme Motor Oil SAE 30, 40, 10W-40, 20W-50

Product Use: Automotive Engine Oil
Product Number(s): 220002, 220011, 220059, 220060
Company Identification
Chevron Canada Limited
1050 West Pender
Vancouver, BC V6E 3T4
Canada
www.chevronlubricants.com

Transportation Emergency Response
CHEMTREC: (800) 424-9300 or (703) 527-3887

Health Emergency
Chevron Emergency Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623

Product Information
email : lubemsds@chevron.com
Product Information: (800) LUBE TEK

SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION: Not classified as hazardous according to Canada regulatory guidelines.

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Highly refined mineral oil (C15 - C50)	Mixture	70 - 99 %weight

Information on ingredients that are considered Controlled Products and/or that appear on the WHMIS

Ingredient Disclosure List (IDL) is provided as required by the Canadian Hazardous Products Act (HPA, Sections 13 and 14). Ingredients considered hazardous under the OSHA Hazard Communication Standard, 29 CFR 1910.1200, are also listed. See Section 15 for additional regulatory information.

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye: No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.

Skin: No specific first aid measures are required. As a precaution, remove clothing and shoes if contaminated. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

Ingestion: No specific first aid measures are required. Do not induce vomiting. As a precaution, get medical advice.

Inhalation: No specific first aid measures are required. If exposed to excessive levels of material in the air, move the exposed person to fresh air. Get medical attention if coughing or respiratory discomfort occurs.

Most important symptoms and effects, both acute and delayed

IMMEDIATE HEALTH EFFECTS

Eye: Not expected to cause prolonged or significant eye irritation.

Skin: Contact with the skin is not expected to cause prolonged or significant irritation. Contact with the skin is not expected to cause an allergic skin response. Not expected to be harmful to internal organs if absorbed through the skin.

Ingestion: Not expected to be harmful if swallowed.

Inhalation: Not expected to be harmful if inhaled. Contains a petroleum-based mineral oil. May cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of oil mist at airborne levels above the recommended mineral oil mist exposure limit. Symptoms of respiratory irritation may include coughing and difficulty breathing.

Indication of any immediate medical attention and special treatment needed Not Applicable

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO₂) to extinguish flames.

PROTECTION OF FIRE FIGHTERS:

Fire Fighting Instructions: This material will burn although it is not easily ignited. See Section 7 for proper handling and storage. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in vicinity of spilled material.

Spill Management: Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.

Reporting: Report spills to local authorities as appropriate or required.

SECTION 7 HANDLING AND STORAGE

General Handling Information: Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

Precautionary Measures: Keep out of the reach of children.

Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures.

Container Warnings: Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:

Use in a well-ventilated area.

PERSONAL PROTECTIVE EQUIPMENT

Eye/Face Protection: No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.

Skin Protection: No special protective clothing is normally required. Where splashing is possible, select protective clothing depending on operations conducted, physical requirements and other substances in the workplace. Suggested materials for protective gloves include: 4H (PE/EVAL), Nitrile Rubber, Silver Shield, Viton.

Respiratory Protection: No respiratory protection is normally required. If user operations generate an oil mist, determine if airborne concentrations are below the occupational exposure limit for mineral oil mist. If not, wear an approved respirator that provides adequate protection from the measured concentrations of this material. For air-purifying respirators use a particulate cartridge. Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Country/ Agency	TWA	STEL	Ceiling	Notation
Highly refined mineral oil (C15 - C50)	ACGIH	5 mg/m3	10 mg/m3	--	--

No applicable occupational exposure limits exist for this material or its components. NOTE ON OCCUPATIONAL EXPOSURE LIMITS: Consult local authorities for acceptable provincial values in Canada. Consult the Canadian Standards Association Standard 94.4-2002 Selection, Use and Care of Respirators.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

- Color:** Amber
- Physical State:** Liquid
- Odor:** Petroleum odor
- Odor Threshold:** No data available
- pH:** Not Applicable
- Vapor Pressure:** <0.01 mmHg @ 100 °C (212 °F)
- Vapor Density (Air = 1):** >1
- Initial Boiling Point:** 315°C (599°F)
- Solubility:** Soluble in hydrocarbons; insoluble in water
- Freezing Point:** Not Applicable @ 15.6°C (60.1°F) / 15.6°C (60.1°F)
- Density:** 0.8732 kg/l @ 15°C (59°F) Minimum
- Viscosity:** 9.9 mm2/s @ 100°C (212°F) (Min)
- Decomposition temperature:** No data available
- Octanol/Water Partition Coefficient:** No data available

FLAMMABLE PROPERTIES:

- Flammability (solid, gas):** No Data Available
- Flashpoint:** (Cleveland Open Cup) 205 °C (401 °F) (Min)
- Autoignition:** No data available
- Flammability (Explosive) Limits (% by volume in air):** Lower: Not Applicable Upper: Not Applicable

SECTION 10 STABILITY AND REACTIVITY

- Reactivity:** May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
- Chemical Stability:** This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Incompatibility With Other Materials: Not applicable
Hazardous Decomposition Products: None known (None expected)
Hazardous Polymerization: Hazardous polymerization will not occur.
Sensitivity to Mechanical Impact: No.

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Serious Eye Damage/Irritation: The eye irritation hazard is based on evaluation of data for product components.

Skin Corrosion/Irritation: The skin irritation hazard is based on evaluation of data for product components.

Skin Sensitization: The skin sensitization hazard is based on evaluation of data for product components.

Acute Dermal Toxicity: The acute dermal toxicity hazard is based on evaluation of data for product components.

Acute Oral Toxicity: The acute oral toxicity hazard is based on evaluation of data for product components.

Acute Inhalation Toxicity: The acute inhalation toxicity hazard is based on evaluation of data for product components.

Acute Toxicity Estimate: Not Determined

Germ Cell Mutagenicity: The hazard evaluation is based on data for components or a similar material.

Carcinogenicity: The hazard evaluation is based on data for components or a similar material.

Reproductive Toxicity: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Single Exposure: The hazard evaluation is based on data for components or a similar material.

Specific Target Organ Toxicity - Repeated Exposure: The hazard evaluation is based on data for components or a similar material.

ADDITIONAL TOXICOLOGY INFORMATION:

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water.

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B).

These oils have not been classified by the American Conference of Governmental Industrial Hygienists (ACGIH) as: confirmed human carcinogen (A1), suspected human carcinogen (A2), or confirmed animal carcinogen with unknown relevance to humans (A3).

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY

This material is not expected to be harmful to aquatic organisms. The product has not been tested. The statement has been derived from the properties of the individual components.

MOBILITY

No data available.

PERSISTENCE AND DEGRADABILITY

This material is not expected to be readily biodegradable. The biodegradability of this material is based on an evaluation of data for the components or a similar material. The product has not been tested. The statement has been derived from the properties of the individual components.

POTENTIAL TO BIOACCUMULATE

Bioconcentration Factor: No data available.
Octanol/Water Partition Coefficient: No data available

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. Oil collection services are available for used oil recycling or disposal. Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods. (See B.C. Reg. GY/92 Waste Management Act; R.R.O. 1990, Reg. 347 General-Waste Management; C.C.S.M.c. W40 The Waste Reduction and Prevention Act; N.S. Reg. 51/95 and N.S. Reg. 179/96 for examples of Provincial legislation.)

SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

TC Shipping Description: NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORTATION UNDER TDG REGULATIONS

IMO/IMDG Shipping Description: PETROLEUM LUBRICATING OIL; NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER THE IMDG CODE

ICAO/IATA Shipping Description: PETROLEUM LUBRICATING OIL; NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER ICAO TI OR IATA DGR

DOT Shipping Description: PETROLEUM LUBRICATING OIL, NOT REGULATED AS A HAZARDOUS MATERIAL FOR TRANSPORTATION UNDER 49 CFR

SECTION 15 REGULATORY INFORMATION

Revision Number: 7

Revision Date: SEPTEMBER 10, 2015

6 of 8

Chevron Supreme Motor Oil SAE 30,
40, 10W-40, 20W-50
SDS : 6717CAN

REGULATORY LISTS SEARCHED:

- 01-1=IARC Group 1
- 01-2A=IARC Group 2A
- 01-2B=IARC Group 2B
- 02=NTP Carcinogen
- 03=EPCRA 313
- 04=CA Proposition 65
- 05=MA RTK
- 06=NJ RTK
- 07=PA RTK

No components of this material were found on the regulatory lists above.

CHEMICAL INVENTORIES:

All components comply with the following chemical inventory requirements: AICS (Australia), DSL (Canada), KECl (Korea), PICCS (Philippines), TSCA (United States).

One or more components has been notified but may not be listed in the following chemical inventories: IECSC (China). Secondary notification may be required.

One or more components is listed on ELINCS (European Union). Secondary notification by the importer may be required. All other components are listed or exempted from listing on EINECS.

One or more components does not comply with the following chemical inventory requirements: ENCS (Japan).

SECTION 16 OTHER INFORMATION

REVISION STATEMENT: This revision updates the following sections of this Material Safety Data Sheet: 1-16.

Revision Date: SEPTEMBER 10, 2015

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
GHS - Globally Harmonized System	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Governmental Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	SDS - Safety Data Sheet
HMIS - Hazardous Materials Information System	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration
NCEL - New Chemical Exposure Limit	EPA - Environmental Protection Agency
SCBA - Self-Contained Breathing Apparatus	

The above information is based on the data of which we are aware and is believed to be correct

as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

SAFETY DATA SHEET

DURON^{TM/MC} -E 15W-40



000003000916

Version 4.1

Revision Date 2017/03/24

Print Date 2017/03/24

SECTION 1. IDENTIFICATION

Product name : DURON^{TM/MC} -E 15W-40

Product code : DE15CBE, DE15P5R, DE15P20, DE15ICT, DE15IBC, DE15DRR, DE15DRM, DE15DCT, DE15C16, DE15C12, DE15C02, DE15, DE15BLK

Manufacturer or supplier's details
Petro-Canada Lubricants Inc.
2310 Lakeshore Road West
Mississauga ON L5J 1K2
Canada

Emergency telephone number
Petro-Canada Lubricants Inc.: +1 905-403-5770;
CHEMTREC Transport Emergency: 1-800-424-9300;
Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : DURON-E 15W-40 is a superior quality heavy duty diesel engine oil specifically designed for '07 EPA engine requirements along with improved performance benefits in legacy engines. Application includes modern low emission diesel engines with cooled exhaust gas recirculation and exhaust after treatment technology. It is suitable also for passenger car and light truck diesel engines, and spark ignition engines.

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

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	viscous liquid
Colour	Light amber.
Odour	Mild petroleum oil like.

GHS Classification

Not a hazardous substance or mixture.

GHS label elements

Not a hazardous substance or mixture.

Potential Health Effects

Primary Routes of Entry : Eye contact
Ingestion

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Inhalation
Skin contact

Aggravated Medical Condition : None known.

Other hazards

None known.

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 carcinogen by ACGIH.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration
White mineral oil (petroleum)	8042-47-5	30 - 50 %
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	30 - 50 %
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based	72623-87-1	30 - 50 %
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity	72623-85-9	30 - 50 %
Zinc alkyldithiophosphate	113706-15-3	1 - 5 %

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 case of eye contact : Remove contact lenses.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.

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- 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 fire-fighting : Cool closed containers exposed to fire with water spray.
- Hazardous combustion products : Carbon oxides (CO, CO₂), nitrogen oxides (NO_x), sulphur oxides (SO_x), phosphorus oxides (PO_x), sulphur compounds (H₂S), zinc oxides (ZnO_x), metal oxides, hydrocarbons, 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

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- 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

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
White mineral oil (petroleum)	8042-47-5	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 (Inhalable fraction)	5 mg/m ³	ACGIH
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 (Inhalable fraction)	5 mg/m ³	ACGIH
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based	72623-87-1	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 (Inhalable fraction)	5 mg/m ³	ACGIH
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity	72623-85-9	TWA (Mist)	5 mg/m ³	CA AB OEL

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		STEL (Mist)	10 mg/m3	CA AB OEL
		TWAEV (Mist)	5 mg/m3	CA QC OEL
		STEV (Mist)	10 mg/m3	CA QC OEL
		TWA (Inhalable fraction)	5 mg/m3	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 according to the amount and concentration of the dangerous substance at the 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

Appearance : viscous liquid

Colour : Light amber.

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Odour	: Mild petroleum oil like.
Odour Threshold	: No data available
pH	: No data available
Pour point	: -36 °C (-33 °F)
Boiling point/boiling range	: No data available
Flash point	: 228 °C (442 °F) Method: Cleveland open cup
Fire Point	: 247 °C (477 °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
Relative density	: No data available
Density	: 0.8711 kg/l (15 °C / 59 °F)
Solubility(ies)	
Water solubility	: insoluble
Partition coefficient: n-octanol/water	: No data available
Viscosity	
Viscosity, kinematic	: 118.2 cSt (40 °C / 104 °F) 15.6 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

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Incompatible materials : Reactive with oxidizing agents and water.

Hazardous decomposition products : May release COx, H2S, 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 : Assessment: The substance or mixture has no acute dermal toxicity

Components:

White mineral oil (petroleum):

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,

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,

lubricating oils (petroleum), C20-50, 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,

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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,

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

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish :
Remarks: No data available

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

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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 product residue in accordance with the instructions of the person responsible for waste disposal.

SECTION 14. TRANSPORT INFORMATION

International Regulations

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.

National Regulations

TDG

Not regulated as a dangerous good

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SECTION 15. REGULATORY INFORMATION

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.
ELINCS	At least one component is not listed in EINECS but all such components are listed in ELINCS.

SECTION 16. OTHER INFORMATION

For Copy of SDS : Internet: lubricants.petro-canada.com/sds
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

Revision Date : 2017/03/24

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.

NULON 85W-140 LIMITED SLIP DIFFERENTIAL OIL

Chemwatch Independent Material Safety Data Sheet
Issue Date: 24-Aug-2010
C9317EC

CHEMWATCH 4731-28
Version No:2.0
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Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

NULON 85W-140 LIMITED SLIP DIFFERENTIAL OIL

SYNONYMS

"Product Code: LSD85W140"

PRODUCT USE

• Used according to manufacturer's directions.
Limited slip differential oil.

SUPPLIER

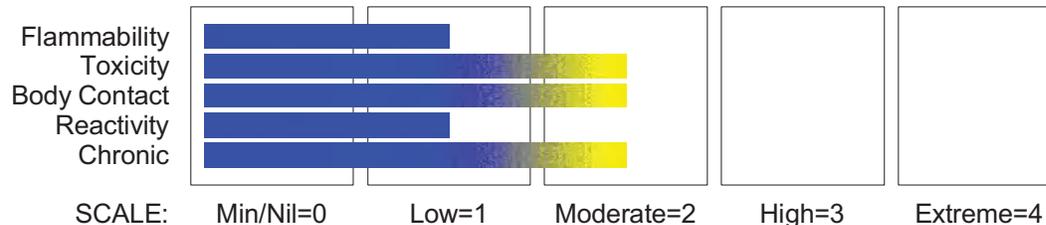
Company: Nulon Products Pty Ltd
Address:
17 Yulong Close
Moorebank
NSW, 2170
Australia
Telephone: +61 2 9608 7800
Fax: +61 2 9601 4700
Email: msds@nulon.com.au

Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE

NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. According to NOHSC Criteria, and ADG Code.

CHEMWATCH HAZARD RATINGS



POISONS SCHEDULE

None

RISK

•None under normal operating conditions.

SAFETY

Safety Codes
S23
S24
S39
S26

Safety Phrases
• Do not breathe gas/fumes/vapour/spray.
• Avoid contact with skin.
• Wear eye/face protection.
• In case of contact with eyes rinse with plenty of water and contact Doctor or Poisons Information Centre.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
residual oils, petroleum, solvent- refined (severe)	64742-01-4.	80-85
paraffinic distillate, heavy, hydrotreated (severe)	64742-54-7.	5-10
mineral oil	Not avail.	5-15
ingredients at levels determined not to be hazardous		balance

continued...

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Section 4 - FIRST AID MEASURES

SWALLOWED

- - Immediately give a glass of water.
- First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

EYE

- If this product comes in contact with the eyes:
 - Wash out immediately with fresh running water.
 - Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
 - Seek medical attention without delay; if pain persists or recurs seek medical attention.
 - Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

- If skin contact occurs:
 - Immediately remove all contaminated clothing, including footwear.
 - Flush skin and hair with running water (and soap if available).
 - Seek medical attention in event of irritation.

INHALED

- - If fumes or combustion products are inhaled remove from contaminated area.
- Other measures are usually unnecessary.

NOTES TO PHYSICIAN

- Treat symptomatically.
 - Heavy and persistent skin contamination over many years may lead to dysplastic changes. Pre-existing skin disorders may be aggravated by exposure to this product.
 - In general, emesis induction is unnecessary with high viscosity, low volatility products, i.e. most oils and greases.
 - High pressure accidental injection through the skin should be assessed for possible incision, irrigation and/or debridement.
- NOTE: Injuries may not seem serious at first, but within a few hours tissue may become swollen, discoloured and extremely painful with extensive subcutaneous necrosis.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

- - Water spray or fog.
- Alcohol stable foam.
- Dry chemical powder.
- Carbon dioxide.

FIRE FIGHTING

- - Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Use water delivered as a fine spray to control fire and cool adjacent area.

FIRE/EXPLOSION HAZARD

- - Combustible.
- Slight fire hazard when exposed to heat or flame.
- Heating may cause expansion or decomposition leading to violent rupture of containers.
- On combustion, may emit toxic fumes of carbon monoxide (CO).

Combustion products include: carbon dioxide (CO₂), phosphorus oxides (PO_x), sulfur oxides (SO_x), other pyrolysis products typical of burning organic material.

May emit poisonous fumes.

CARE: Water in contact with hot liquid may cause foaming and a steam explosion with wide scattering of hot oil and possible severe burns. Foaming may cause overflow of containers and may result in possible fire.

FIRE INCOMPATIBILITY

- - Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.

HAZCHEM

None

PERSONAL PROTECTION

Glasses:
Chemical goggles.

Gloves:
PVC chemical resistant type.

Respirator:
Type A- P Filter of sufficient capacity

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

- Slippery when spilt.
- Remove all ignition sources.
- Clean up all spills immediately.

continued...

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Section 6 - ACCIDENTAL RELEASE MEASURES

- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact by using protective equipment.

MAJOR SPILLS

- Slippery when spilt.
- Moderate hazard.
- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water course.

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

- - DO NOT allow clothing wet with material to stay in contact with skin.
- Electrostatic discharge may be generated during pumping - this may result in fire.
- Ensure electrical continuity by bonding and grounding (earthing) all equipment.
- Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (≤ 1 m/sec until fill pipe submerged to twice its diameter, then ≤ 7 m/sec).
- Avoid splash filling.
- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.

SUITABLE CONTAINER

- - Metal can or drum
- Packaging as recommended by manufacturer.
- Check all containers are clearly labelled and free from leaks.

STORAGE INCOMPATIBILITY

- CARE: Water in contact with heated material may cause foaming or a steam explosion with possible severe burns from wide scattering of hot material. Resultant overflow of containers may result in fire.
- Avoid reaction with oxidising agents.

STORAGE REQUIREMENTS

- - Store in original containers.
- Keep containers securely sealed.
- No smoking, naked lights or ignition sources.
- Store in a cool, dry, well-ventilated area.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA mg/m ³
Australia Exposure Standards	residual oils, petroleum, solvent-refined (severe) (Oil mist, refined mineral)	5
Australia Exposure Standards	paraffinic distillate, heavy, hydrotreated (severe) (Oil mist, refined mineral)	5
Australia Exposure Standards	mineral oil (Oil mist, refined mineral)	5

PERSONAL PROTECTION

RESPIRATOR

Type A-P Filter of sufficient capacity

EYE

- - Safety glasses with side shields.
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

continued...

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

HANDS/FEET

- Wear chemical protective gloves, eg. PVC.
- Wear safety footwear or safety gumboots, eg. Rubber.

NOTE:

- The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.

- Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed.

Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as:

- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity.

OTHER

- Overalls.
- P.V.C. apron.
- Barrier cream.
- Skin cleansing cream.

ENGINEERING CONTROLS

- General exhaust is adequate under normal operating conditions. Local exhaust ventilation may be required in special circumstances.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Clear bright amber liquid; not miscible with water.

PHYSICAL PROPERTIES

Liquid.

Does not mix with water.

Floats on water.

State	Liquid	Molecular Weight	Not Available
Melting Range (°C)	Not Available	Viscosity	384 cSt@40°C
Boiling Range (°C)	Not Available	Solubility in water (g/L)	Immiscible
Flash Point (°C)	180 (PMCC)	pH (1% solution)	Not Applicable
Decomposition Temp (°C)	Not Available	pH (as supplied)	Not Applicable
Autoignition Temp (°C)	Not Available	Vapour Pressure (kPa)	Not Available
Upper Explosive Limit (%)	Not Available	Specific Gravity (water=1)	0.88- 0.93
Lower Explosive Limit (%)	Not Available	Relative Vapour Density (air=1)	Not Available
Volatile Component (%vol)	Not Available	Evaporation Rate	Not Available

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

- - Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

- Not applicable.

CHRONIC HEALTH EFFECTS

- Not applicable.

TOXICITY AND IRRITATION

PARAFFINIC DISTILLATE, HEAVY, HYDROTREATED (SEVERE):

MINERAL OIL:

RESIDUAL OILS, PETROLEUM, SOLVENT-REFINED (SEVERE):

- unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

- unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

• Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type.
No significant acute toxicological data identified in literature search.

RESIDUAL OILS, PETROLEUM, SOLVENT-REFINED (SEVERE):

continued...

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Section 11 - TOXICOLOGICAL INFORMATION

• No significant acute toxicological data identified in literature search.
The substance is classified by IARC as Group 3:
NOT classifiable as to its carcinogenicity to humans.
Evidence of carcinogenicity may be inadequate or limited in animal testing.

PARAFFINIC DISTILLATE, HEAVY, HYDROTREATED (SEVERE):

TOXICITY

Oral (rat) LD50: >15000 mg/kg
Dermal (None) rabbit: None >5000 mg/kg
• No data of toxicological significance identified in literature search.

IRRITATION

Nil Reported

MINERAL OIL:

• Toxicity and Irritation data for petroleum-based mineral oils are related to chemical components and vary as does the composition and source of the original crude.
A small but definite risk of occupational skin cancer occurs in workers exposed to persistent skin contamination by oils over a period of years.
Petroleum oils which are solvent refined/extracted or severely hydrotreated, contain very low concentrations of both.

Section 12 - ECOLOGICAL INFORMATION

No data

Section 13 - DISPOSAL CONSIDERATIONS

- - Containers may still present a chemical hazard/ danger when empty.
 - Return to supplier for reuse/ recycling if possible.
- Otherwise:
- If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.
 - Where possible retain label warnings and MSDS and observe all notices pertaining to the product.
- Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area.
- A Hierarchy of Controls seems to be common - the user should investigate:
- Reduction.
 - DO NOT allow wash water from cleaning or process equipment to enter drains.
 - It may be necessary to collect all wash water for treatment before disposal.
 - In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
 - Where in doubt contact the responsible authority.
 - Recycle wherever possible or consult manufacturer for recycling options.
 - Consult State Land Waste Authority for disposal.
 - Bury or incinerate residue at an approved site.
 - Recycle containers if possible, or dispose of in an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION

HAZCHEM:

None (ADG7)

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: ADG7, UN, IATA, IMDG

Section 15 - REGULATORY INFORMATION

POISONS SCHEDULE

None

REGULATIONS

Regulations for ingredients

residual oils, petroleum, solvent-refined (severe) (CAS: 64742-01-4) is found on the following regulatory lists;

"Australia Hazardous Substances", "Australia Inventory of Chemical Substances (AICS)", "OECD Representative List of High Production Volume (HPV) Chemicals"

continued...

NULON 85W-140 LIMITED SLIP DIFFERENTIAL OIL

Chemwatch Independent Material Safety Data Sheet
Issue Date: 24-Aug-2010
C9317EC

CHEMWATCH 4731-28

Version No:2.0

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Section 15 - REGULATORY INFORMATION

paraffinic distillate, heavy, hydrotreated (severe) (CAS: 64742-54-7) is found on the following regulatory lists:

"Australia Hazardous Substances", "Australia High Volume Industrial Chemical List (HVICL)", "Australia Inventory of Chemical Substances (AICS)", "OECD Representative List of High Production Volume (HPV) Chemicals"

No data for Nulon 85W-140 Limited Slip Differential Oil (CW: 4731-28)

No data for mineral oil (CAS: , Not avail)

Section 16 - OTHER INFORMATION

• Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:

www.chemwatch.net/references.

• The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings.

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Issue Date: 24-Aug-2010

Print Date: 25-Aug-2010

This is the end of the MSDS.

Cover Sheet



INSTRUMENT CORPORATION
 ONE MICROMERITICS DR.
 NORCROSS, GA 30093-1877 U.S.A.

MSDS
HYDRAULIC FLUID OD-15-10
 (1-L)

SIZE
A

NUMBER

920/16002/00MSDS

PAGE

X of 3

REV	REVISION DESCRIPTION	BY	DATE	CHK	REL. NO.	DWN BY	J. Pittman
-	Formal Release	C. Bills	6-26-07	—	970446	ES SIG	K. Massengill
A	New format and numbering system	C. Bills	5/24/00	—	990544	QA SIG	A. Dovin
B	Revision	MD	04/02/03	JM	030200	HR SIG	J. Mocny
C	Revision	JAP	6/25/04		040265	ENGR SIG	P. Hendrix
						ENGR	J. Mocny

Micromeritics Material Safety Data Sheet

Title : HYDRAULIC FLUID OD-15-10(1-L)
Date of Preparation : 06/25/04

MSDS No. : 920/16002/00MSDS
Revision : C

Section 1 - Chemical Product and Company Identification

Product/Chemical Name: HYDRAULIC FLUID OD-15-10

Chemical Formula: Blend

CAS Number: n/a

Other Designations:

General Use:

Supplier: Micromeritics Instrument Corp.
1 Micromeritics Dr.
Norcross, GA 30093-1877 USA

Contact: Human Resources
Phone: (770) 662-3620
Fax: (770) 662-3696

Manufacturer: Sun Company, Inc. Ten Penn Center 1801 Market St. Philadelphia, PA 19103-1699
(770) 662-3678

Section 2 - Composition / Information on Ingredients

Ingredient Name	CAS Number	% vol
Severely solvent refined heavy paraffinic petroleum oil	64741-88-4	90-100
Zinc dialkyl Dithiophosphats	68649-42-3	0-1
Butylated Phenol	n/a	0-1
Calcium Sulfonate	61789-86-4	0-1
Acrylic Copolymer	68171-46-0	0-1
2-Ethylhexanol	104-76-7	0-1

Trace Impurities:

Ingredient	OSHA PEL		ACGIH TLV		NIOSH REL		NIOSH
	TWA	STEL	TWA	STEL	TWA	STEL	IDLH
Severely solvent refined heavy paraffinic petroleum oil	5mg/m ³	-	5mg/m ³	-	n/a	n/a	n/a
Zinc dialkyl Dithiophosphats	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Butylated Phenol	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Calcium Sulfonate	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Acrylic Copolymer	n/a	n/a	n/a	n/a	n/a	n/a	n/a
2-Ethylhexanol	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Additional exposure limits: Oil Mist	5mg/m ³		5mg/m ³				

Section 3 - Hazards Identification

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Potential Health Effects

Primary Entry Routes: Skin

Effects of Overexposure:

Inhalation: No effects expected

Eye: Contact with the eye may cause minimal irritation.

Skin: Practically non-toxic if absorbed (LD50 greater than 2000 mg/kg). May cause mild irritation with prolonged or repeated contact.

Ingestion: Practically non-toxic (LD50 > 15g/Kg).

HMIS

H 1

F 1

R 0

PPE†

†Sec. 8

Section 4 - First Aid Measures

Inhalation: Move person to fresh air.

Eye: Flush with water.

Skin: Wash with soap and water until no odor remains. Wash clothing before reuse.

Swallowing: Practically non-toxic. Induction of vomiting not required. Obtain emergency medical attention. Small amounts which accidentally enter mouth should be rinsed out until taste of it is gone.

Other Information: Warning!! High pressure injection of oil through the skin is a medial emergency. There may be no sign of injury and no initial pain. This oil must be removed completely by a physician. Failure to obtain immediate treatment has resulted in loss of a finger, hand or arm.

WHMIS Classification: Not controlled.

Section 5 - Fire-Fighting Measures

Flash Point: 380°F (192°C)

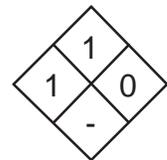
Flash Point Method: COC

Extinguishing Media: Water spray, regular foam, dry chemical, carbon dioxide.

Unusual Fire or Explosion Hazards: n/a

Fire-Fighting Procedures: Wear self-contained breathing apparatus. Wear structural firefighters protective clothing.

NFPA



Section 6 - Accidental Release Measures

Spill /Leak Procedures: n/a

Section 7 - Handling and Storage

Handling/ Storage Requirements: n/a

Section 8 - Exposure Controls / Personal Protection

N/A

Section 9 - Physical and Chemical Properties

Appearance and Odor: clear fluid, little odor

Odor Threshold: n/a

Vapor Pressure: <0.0001 (mm Hg at 20 °C)

Vapor Density (Air=1): 10 +

Formula Weight: n/a

Density: n/a

Specific Gravity (H₂O=1, at 4 °C): 0.87

Water Solubility: nil

Other Solubilities: n/a

Boiling Point: n/a

Melting Point: n/a

Viscosity: 165 sus @ 100°F. 32.0 CST @ 40 °C.

% Volatile: n/a

Evaporation Rate: 1000X slower (ethyl ether = 1)

Section 10 - Stability and Reactivity

Stability: HYDRAULIC FLUID OD-15-10 is stable.

Polymerization: Hazardous polymerization will not occur.

Chemical Incompatibilities: Strong oxidizers.

Conditions to Avoid: n/a

Hazardous Decomposition Products: Combustion will produce carbon monoxide, oxides of sulfur and asphyxiants.

Section 11- Toxicological Information

n/a

Section 12 - Ecological Information

Ecotoxicity: n/a

Section 13 - Disposal Considerations

Disposal: n/a

Section 14 - Transport Information

n/a

Section 15 - Regulatory Information

n/a

Section 16 - Other Information

Prepared By: C. Bills

Revision Notes:

Disclaimer:

SAFETY DATA SHEET

DEXRON GEAR OIL 75W-90

000003000195

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Print Date 2017/02/01



SECTION 1. IDENTIFICATION

Product name : DEXRON GEAR OIL 75W-90
Product code : DEX75IBC, DEX75DRM, DEX75, DEX75BLK

Manufacturer or supplier's details
Petro-Canada Lubricants Inc.
2310 Lakeshore Road West
Mississauga ON L5J 1K2
Canada

Emergency telephone number : Petro-Canada Lubricants Inc.: +1 905-403-5770;
CHEMTREC Transport Emergency: 1-800-424-9300;
Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : A rear axle and differential lubricant for light duty vehicles.
Meets General Motors specification 9986285.

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

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	viscous liquid
Colour	dark yellow
Odour	Mild petroleum oil like or no odour.

GHS Classification

Not a hazardous substance or mixture.

GHS label elements

Not a hazardous substance or mixture.

Potential Health Effects

Primary Routes of Entry : Eye contact
Ingestion
Inhalation
Skin contact

Aggravated Medical Condition : None known.

Other hazards

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None known.

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 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 %
1-Decene, homopolymer, hydrogenated	68037-01-4	30 - 50 %
Methacrylate copolymers		1 - 5 %
Petroleum oil		1 - 5 %
Alkyl phosphate		1 - 5 %
Long-chain alkyl amine with substituted heteromonocyclic		1 - 5 %
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 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.

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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 fire-fighting : 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.

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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

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 (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

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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.
- 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 : dark yellow
- Odour : Mild petroleum oil like or no odour.
- Odour Threshold : No data available
- pH : No data available
- Pour point : < -57 °C (< -71 °F)
- Boiling point/boiling range : No data available
- Flash point : 187 °C (369 °F)
Method: Cleveland open cup
- Fire Point : 225 °C (437 °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 : 0.8567 kg/l (15 °C / 59 °F)
- Solubility(ies)
- Water solubility : insoluble
- Partition coefficient: n-octanol/water : No data available
- Viscosity

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Viscosity, kinematic	: 88.5 cSt (40 °C / 104 °F)
	15.2 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 CO _x , PO _x , SO _x , NO _x , 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,

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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

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

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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 Regulations

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.

National Regulations

TDG

Not regulated as a dangerous good

SECTION 15. REGULATORY INFORMATION

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

This product contains one or several components that are not on the Canadian DSL nor NDSL lists.

TSCA

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

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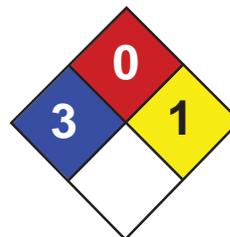
SECTION 16. OTHER INFORMATION

For Copy of SDS : Internet: lubricants.petro-canada.com/sds
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

Revision Date : 2017/01/27

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.



Health	3
Fire	0
Reactivity	1
Personal Protection	

Material Safety Data Sheet Hydrochloric acid MSDS

Section 1: Chemical Product and Company Identification

Product Name: Hydrochloric acid

Catalog Codes: SLH1462, SLH3154

CAS#: Mixture.

RTECS: MW4025000

TSCA: TSCA 8(b) inventory: Hydrochloric acid

CI#: Not applicable.

Synonym: Hydrochloric Acid; Muriatic Acid

Chemical Name: Not applicable.

Chemical Formula: Not applicable.

Contact Information:

Sciencelab.com, Inc.

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Hydrogen chloride	7647-01-0	20-38
Water	7732-18-5	62-80

Toxicological Data on Ingredients: Hydrogen chloride: GAS (LC50): Acute: 4701 ppm 0.5 hours [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:

Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (irritant, corrosive), of ingestion, . Slightly hazardous in case of inhalation (lung sensitizer). Non-corrosive for lungs. Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:

Slightly hazardous in case of skin contact (sensitizer). **CARCINOGENIC EFFECTS:** Classified 3 (Not classifiable for human.) by IARC [Hydrochloric acid]. **MUTAGENIC EFFECTS:** Not available. **TERATOGENIC EFFECTS:** Not available. **DEVELOPMENTAL TOXICITY:** Not available. The substance may be toxic to kidneys, liver, mucous membranes, upper respiratory tract, skin, eyes, Circulatory System, teeth. Repeated or prolonged exposure to the substance can produce target

organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

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 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. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:

If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: of metals

Explosion Hazards in Presence of Various Substances: Non-explosive in presence of open flames and sparks, of shocks.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards:

Non combustible. Calcium carbide reacts with hydrogen chloride gas with incandescence. Uranium phosphide reacts with hydrochloric acid to release spontaneously flammable phosphine. Rubidium acetylene carbides burns with slightly warm hydrochloric acid. Lithium silicide in contact with hydrogen chloride becomes incandescent. When dilute hydrochloric acid is used, gas spontaneously flammable in air is evolved. Magnesium boride treated with concentrated hydrochloric acid produces spontaneously flammable gas. Cesium acetylene carbide burns hydrogen chloride gas. Cesium carbide ignites in contact with hydrochloric acid unless acid is dilute. Reacts with most metals to produce flammable Hydrogen gas.

Special Remarks on Explosion Hazards:

Hydrogen chloride in contact with the following can cause an explosion, ignition on contact, or other violent/vigorous reaction: Acetic anhydride AgClO + CCl4 Alcohols + hydrogen cyanide, Aluminum Aluminum-titanium alloys (with HCl vapor), 2-Amino ethanol, Ammonium hydroxide, Calcium carbide Ca3P2 Chlorine + dinitroanilines (evolves gas), Chlorosulfonic acid Cesium carbide Cesium acetylene carbide, 1,1-Difluoroethylene Ethylene diamine Ethylene imine, Fluorine, HClO4 Hexalithium disilicide H2SO4 Metal acetylides or carbides, Magnesium boride, Mercuric sulfate, Oleum, Potassium permanganate, beta-Propiolactone Propylene oxide Rubidium carbide, Rubidium, acetylene carbide Sodium (with aqueous HCl), Sodium hydroxide Sodium tetraselenium, Sulfonic acid, Tetraselenium tetranitride, U3P4 , Vinyl acetate. Silver perchlorate with carbon tetrachloride in the presence of hydrochloric acid produces trichloromethyl perchlorate which detonates at 40 deg. C.

Section 6: Accidental Release Measures

Small Spill:

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of sodium carbonate.

Large Spill:

Corrosive liquid. Poisonous liquid. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of sodium carbonate. 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 and Storage

Precautions:

Keep locked up.. Keep container dry. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, organic materials, metals, alkalis, moisture. May corrode metallic surfaces. Store in a metallic or coated fiberboard drum using a strong polyethylene inner package.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:

Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:

CEIL: 5 (ppm) from OSHA (PEL) [United States] CEIL: 7 (mg/m3) from OSHA (PEL) [United States] CEIL: 5 from NIOSH CEIL: 7 (mg/m3) from NIOSH TWA: 1 STEL: 5 (ppm) [United Kingdom (UK)] TWA: 2 STEL: 8 (mg/m3) [United Kingdom (UK)] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Pungent. Irritating (Strong.)

Taste: Not available.

Molecular Weight: Not applicable.

Color: Colorless to light yellow.

pH (1% soln/water): Acidic.

Boiling Point:

108.58 C @ 760 mm Hg (for 20.22% HCl in water) 83 C @ 760 mm Hg (for 31% HCl in water) 50.5 C (for 37% HCl in water)

Melting Point:

-62.25°C (-80°F) (20.69% HCl in water) -46.2 C (31.24% HCl in water) -25.4 C (39.17% HCl in water)

Critical Temperature: Not available.

Specific Gravity:

1.1- 1.19 (Water = 1) 1.10 (20%and 22% HCl solutions) 1.12 (24% HCl solution) 1.15 (29.57% HCl solution) 1.16 (32% HCl solution) 1.19 (37% and 38%HCl solutions)

Vapor Pressure: 16 kPa (@ 20°C) average

Vapor Density: 1.267 (Air = 1)

Volatility: Not available.

Odor Threshold: 0.25 to 10 ppm

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether.

Solubility: Soluble in cold water, hot water, diethyl ether.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials, water

Incompatibility with various substances:

Highly reactive with metals. Reactive with oxidizing agents, organic materials, alkalis, water.

Corrosivity:

Extremely corrosive in presence of aluminum, of copper, of stainless steel(304), of stainless steel(316). Non-corrosive in presence of glass.

Special Remarks on Reactivity:

Reacts with water especially when water is added to the product. Absorption of gaseous hydrogen chloride on mercuric sulfate becomes violent @ 125 deg. C. Sodium reacts very violently with gaseous hydrogen chloride. Calcium phosphide and hydrochloric acid undergo very energetic reaction. It reacts with oxidizers releasing chlorine gas. Incompatible with, alkali metals, carbides, borides, metal oxides, vinyl acetate, acetylides, sulphides, phosphides, cyanides, carbonates. Reacts with most metals to produce flammable Hydrogen gas. Reacts violently (moderate reaction with heat of evolution) with water especially when water is added to the product. Isolate hydrogen chloride from heat, direct sunlight, alkalies (reacts vigorously), organic materials, and oxidizers (especially nitric acid and chlorates), amines, metals, copper and alloys (e.g. brass), hydroxides, zinc (galvanized materials), lithium silicide (incandescence), sulfuric acid(increase in temperature and pressure) Hydrogen chloride gas is emitted when this product is in contact with sulfuric acid. Adsorption of Hydrochloric Acid onto silicon dioxide results in exothermic reaction. Hydrogen chloride causes aldehydes and epoxides to violently polymerize. Hydrogen chloride or Hydrochloric Acid in contact with the following can cause explosion or ignition on contact or

Special Remarks on Corrosivity:

Highly corrosive. Incompatible with copper and copper alloys. It attacks nearly all metals (mercury, gold, platinum, tantalum, silver, and certain alloys are exceptions). It is one of the most corrosive of the nonoxidizing acids in contact with copper alloys. No corrosivity data on zinc, steel. Severe Corrosive effect on brass and bronze

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

Toxicity to Animals:

Acute oral toxicity (LD50): 900 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 1108 ppm, 1 hours [Mouse]. Acute toxicity of the vapor (LC50): 3124 ppm, 1 hours [Rat].

Chronic Effects on Humans:

CARCINOGENIC EFFECTS: Classified 3 (Not classifiable for human.) by IARC [Hydrochloric acid]. May cause damage to the following organs: kidneys, liver, mucous membranes, upper respiratory tract, skin, eyes, Circulatory System, teeth.

Other Toxic Effects on Humans:

Very hazardous in case of skin contact (corrosive, irritant, permeator), of ingestion, . Hazardous in case of eye contact (corrosive), of inhalation (lung corrosive).

Special Remarks on Toxicity to Animals:

Lowest Published Lethal Doses (LDL/LCL) LDL [Man] -Route: Oral; 2857 ug/kg LCL [Human] - Route: Inhalation; Dose: 1300 ppm/30M LCL [Rabbit] - Route: Inhalation; Dose: 4413 ppm/30M

Special Remarks on Chronic Effects on Humans:

May cause adverse reproductive effects (fetotoxicity). May affect genetic material.

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: Skin: Corrosive. Causes severe skin irritation and burns. Eyes: Corrosive. Causes severe eye irritation/conjunctivitis, burns, corneal necrosis. Inhalation: May be fatal if inhaled. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract. Inhalation of hydrochloric acid fumes produces nose, throat, and laryngeal burning, and irritation, pain and inflammation, coughing, sneezing, choking sensation, hoarseness, laryngeal spasms, upper respiratory tract edema, chest pains, as well as headache, and palpitations. Inhalation of high concentrations can result in corrosive burns, necrosis of bronchial epithelium, constriction of the larynx and bronchi, nasospetal perforation, glottal closure, occur, particularly if exposure is prolonged. May affect the liver. Ingestion: May be fatal if swallowed. Causes irritation and burning, ulceration, or perforation of the gastrointestinal tract and resultant peritonitis, gastric hemorrhage and infection. Can also cause nausea, vomiting (with "coffee ground" emesis), diarrhea, thirst, difficulty swallowing, salivation, chills, fever, uneasiness, shock, strictures and stenosis (esophageal, gastric, pyloric). May affect behavior (excitement), the cardiovascular system (weak rapid pulse, tachycardia), respiration (shallow respiration), and urinary system (kidneys- renal failure, nephritis). Acute exposure via inhalation or ingestion can also cause erosion of tooth enamel. Chronic Potential Health Effects: dyspnea, bronchitis. Chemical pneumonitis and pulmonary edema can also

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Class 8: Corrosive material

Identification: : Hydrochloric acid, solution UNNA: 1789 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:

Connecticut hazardous material survey.: Hydrochloric acid Illinois toxic substances disclosure to employee act: Hydrochloric acid Illinois chemical safety act: Hydrochloric acid New York release reporting list: Hydrochloric acid Rhode Island RTK hazardous substances: Hydrochloric acid Pennsylvania RTK: Hydrochloric acid Minnesota: Hydrochloric acid Massachusetts RTK: Hydrochloric acid Massachusetts spill list: Hydrochloric acid New Jersey: Hydrochloric acid New Jersey spill list: Hydrochloric acid Louisiana RTK reporting list: Hydrochloric acid Louisiana spill reporting: Hydrochloric acid California Director's List of Hazardous Substances: Hydrochloric acid TSCA 8(b) inventory: Hydrochloric acid TSCA 4(a) proposed test rules: Hydrochloric acid SARA 302/304/311/312 extremely hazardous substances: Hydrochloric acid SARA 313 toxic chemical notification and release reporting: Hydrochloric acid CERCLA: Hazardous substances.: Hydrochloric acid: 5000 lbs. (2268 kg)

Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):

CLASS D-2A: Material causing other toxic effects (VERY TOXIC). CLASS E: Corrosive liquid.

DSCL (EEC):

R34- Causes burns. R37- Irritating to respiratory system. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 1

Personal Protection:

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

Health: 3

Flammability: 0

Reactivity: 1

Specific hazard:

Protective Equipment:

Gloves. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Face shield.

Section 16: Other Information

References:

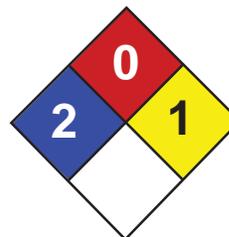
-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. -SAX, N.I. Dangerous Properties of Industrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Guide de la loi et du règlement sur le transport des marchandises dangereuses au Canada. Centre de conformité international Ltée. 1986.

Other Special Considerations: Not available.

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Health	3
Fire	0
Reactivity	1
Personal Protection	

Material Safety Data Sheet

Hydrogen Peroxide 30% MSDS

Section 1: Chemical Product and Company Identification

Product Name: Hydrogen Peroxide 30%

Catalog Codes: SLH1552

CAS#: Mixture.

RTECS: Not applicable.

TSCA: TSCA 8(b) inventory: Water; Hydrogen Peroxide

CI#: Not applicable.

Synonym: Hydrogen Peroxide 30%

Chemical Name: Not applicable.

Chemical Formula: Not applicable.

Contact Information:

Sciencelab.com, Inc.

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Water	7732-18-5	70
Hydrogen Peroxide	7722-84-1	30

Toxicological Data on Ingredients: Hydrogen Peroxide: ORAL (LD50): Acute: 2000 mg/kg [Mouse]. DERMAL (LD50): Acute: 4060 mg/kg [Rat]. 2000 mg/kg [pig]. VAPOR (LC50): Acute: 2000 mg/m 4 hours [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:

Very hazardous in case of skin contact (irritant), of eye contact (irritant). Hazardous in case of skin contact (corrosive), of eye contact (corrosive), of ingestion, . Slightly hazardous in case of inhalation (lung sensitizer). Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Prolonged exposure may result in skin burns and ulcerations. Over-exposure by inhalation may cause respiratory irritation. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to lungs, mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage.

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 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. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: combustible materials

Explosion Hazards in Presence of Various Substances: Slightly explosive in presence of open flames and sparks, of heat, of organic materials, of metals, of acids.

Fire Fighting Media and Instructions:

Fire: Small fires: Use water. Do not use dry chemicals or foams. CO₂, or Halon may provide limited control. Large fires: Flood fire area with water from a distance. Move containers from fire area if you can do it without risk. Do not move cargo or vehicle if cargo has been exposed to heat. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. / Hydrogen peroxide, aqueous solution, with not less than 8% but less than 20% Hydrogen peroxide; Hydrogen peroxide, aqueous solution, with not less than 20% but not more than 60% Hydrogen peroxide (stabilized as necessary)/ [QC Reviewed] [U.S. Department of Transportation. 2000 Emergency Response Guidebook. RSPA P 5800.8 Edition. Washington, D.C: U.S. Government Printing Office, 2000,p. G-140]

Special Remarks on Fire Hazards:

Most cellulose (wood, cotton) materials contain enough catalyst to cause spontaneous ignition with 90% Hydrogen Peroxide. Hydrogen Peroxide is a strong oxidizer. It is not flammable itself, but it can cause spontaneous combustion of flammable materials and continued support of the combustion because it liberates oxygen as it decomposes. Hydrogen peroxide mixed with magnesium and a trace of magnesium dioxide will ignite immediately.

Special Remarks on Explosion Hazards:

Soluble fuels (acetone, ethanol, glycerol) will detonate on a mixture with peroxide over 30% concentration, the violence increasing with concentration. Explosive with acetic acid, acetic anhydride, acetone, alcohols, carboxylic acids, nitrogen containing bases, As₂S₃, Cl₂ + KOH, FeS, FeSO₄ + 2 methylpyridine + H₂SO₄, nitric acid, potassium permanganate, P₂O₅, H₂Se, Alcohols + H₂SO₄, Alcohols + tin chloride, Antimony trisulfide, chlorosulfonic acid, Aromatic hydrocarbons + trifluoroacetic acid, Azelaic acid + sulfuric acid (above 45 C), Benzenesulfonic anhydride, tert-butanol + sulfuric acid, Hydrazine, Sulfuric acid, Sodium iodate, Tetrahydrothiophene, Thiodiglycol, Mercurous oxide, mercuric oxide, Lead dioxide, Lead oxide, Manganese dioxide, Lead sulfide, Gallium + HCl, Ketenes + nitric acid, Iron (II) sulfate + 2-methylpyridine + sulfuric acid, Iron (II) sulfate + nitric acid, + sodium carboxymethylcellulose (when evaporated), Vinyl acetate, trioxane, water + oxygenated compounds (eg: acetaldehyde, acetic acid, acetone, ethanol, formaldehyde, formic acid, methanol, 2-propanol, propionaldehyde), organic compounds. Beware: Many mixtures of hydrogen peroxide and organic materials may not explode upon contact. However, the resulting combination is detonatable either upon catching fire or by impact. EXPLOSION HAZARD: SEVERE, WHEN HIGHLY CONCENTRATED OR PURE H₂O₂ IS EXPOSED TO HEAT, MECHANICAL IMPACT, OR CAUSED TO DECOMPOSE CATALYTICALLY BY METALS & THEIR SALTS, DUSTS & ALKALIES. ANOTHER SOURCE OF HYDROGEN PEROXIDE EXPLOSIONS IS FROM SEALING THE MATERIAL IN STRONG CONTAINERS. UNDER SUCH CONDITIONS EVEN GRADUAL DECOMPOSITION OF HYDROGEN PEROXIDE TO WATER + 1/2 OXYGEN CAN CAUSE LARGE PRESSURES TO BUILD UP IN THE CONTAINERS WHICH MAY BURST EXPLOSIVELY. Fire or explosion: May explode from friction, heat or contamination. These substances will accelerate burning when involved in a fire. May ignite combustibles (wood, paper, oil, clothing, etc.). Some will react explosively with hydrocarbons (fuels). Containers may explode when heated. Runoff may create fire or explosion hazard. /Hydrogen peroxide, aqueous solution, stabilized, with more than 60% Hydrogen peroxide; Hydrogen peroxide, stabilized/ [QC Reviewed] [U.S. Department of Transportation. 2000 Emergency Response Guidebook. RSPA P 5800.8 Edition. Washington, D.C: U.S. Government Printing Office, 2000,p. G-143] . Fire or explosion: These substances will accelerate burning when involved in a fire. Some may decompose explosively when heated or involved in a fire. May explode from heat or contamination. Some will react explosively with hydrocarbons (fuels). May ignite combustibles (wood, paper, oil, clothing, etc.). Containers may explode when heated. Runoff may create fire or explosion hazard. /Hydrogen peroxide, aqueous solution, with not less than 8% but less than 20% Hydrogen peroxide; Hydrogen peroxide, aqueous solution, with not less than 20% but not more than 60% Hydrogen peroxide (stabilized as necessary)/ [QC Reviewed] [U.S. Department of Transportation. 2000 Emergency Response Guidebook. RSPA P 5800.8 Edition. Washington, D.C: U.S. Government Printing Office, 2000,p. G-140] (Hydrogen Peroxide)

Section 6: Accidental Release Measures

Small Spill:

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large Spill:

Corrosive liquid. Oxidizing material. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Avoid contact with a combustible material (wood, paper, oil, clothing...). Keep substance damp using water spray. Do not touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. 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 and Storage

Precautions:

Keep locked up.. Keep container dry. Keep away from heat. Keep away from sources of ignition. Keep away from combustible material.. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, reducing agents, combustible materials, organic materials, metals, acids, alkalis.

Storage:

Keep container tightly closed. Keep container in a cool, well-ventilated area. Separate from acids, alkalis, reducing agents and combustibles. See NFPA 43A, Code for the Storage of Liquid and Solid Oxidizers. Do not store above 8°C (46.4°F). Refrigerate Sensitive to light. Store in light-resistant containers.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:

Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:

Hydrogen Peroxide TWA: 1 (ppm) from ACGIH (TLV) [United States] TWA: 1 (ppm) from OSHA (PEL) [United States] TWA: 1 STEL: 2 [Canada] TWA: 1.4 (mg/m³) from NIOSH TWA: 1.4 (mg/m³) from OSHA (PEL) [United States] TWA: 1 (ppm) [United Kingdom (UK)] TWA: 1.4 (mg/m³) [United Kingdom (UK)] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Odorless.

Taste: Slightly acid. Bitter

Molecular Weight: Not applicable.

Color: Clear Colorless.

pH (1% soln/water): Not available

Boiling Point: 108°C (226.4°F)

Melting Point: -33°C (-27.4°F)

Critical Temperature: Not available.

Specific Gravity: 1.1 (Water = 1)

Vapor Pressure: 3.1 kPa (@ 20°C)

Vapor Density: 1.1 (Air = 1)

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether.

Solubility:

Easily soluble in cold water. Soluble in diethyl ether.

Section 10: Stability and Reactivity Data

Stability: The product is stable. It contains a stabilizer.

Instability Temperature: Not available.

Conditions of Instability: Excess heat, incompatible materials

Incompatibility with various substances: Reactive with reducing agents, combustible materials, organic materials, metals, acids, alkalis.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:

Light sensitive. Incompatible with reducing materials, ethers (dioxane, furfuran, tetrahydrofuran), oxidizing materials, Metals (eg. potassium, sodium lithium, iron, copper, brass, bronze, chromium, zinc, lead, silver, nickel), metal oxides (eg. cobalt oxide, iron oxide, lead oxide, lead hydroxide, manganese oxide), metal salts (eg. calcium permanganate, salts of iron), manganese, asbestos, vanadium, platinum, tungsten, molybdenum, triethylamine, palladium, sodium pyrophosphate, carboxylic acids, cyclopentadiene, formic acid, rust, ketones, sodium carbonate, alcohols, sodium borate, aniline, mercurous chloride, rust, nitric acid, sodium pyrophosphate, hexavalent chromium compounds, tetrahydrofuran, sodium fluoride organic matter, potassium permanganate, urea, chlorosulfonic acid, manganese dioxide, hydrogen selenide, charcoal, coal, sodium borate, alkalis, cyclopentadiene, glycerine, cyanides (potassium, cyanide, sodium cyanide), nitrogen compounds.. Caused to decompose catalytically by metals (in order of decreasing effectiveness): Osmium, Palladium, Platinum, Iridium, Gold, Silver, Manganese, Cobalt, Copper, Lead. Concentrated hydrogen peroxide may decompose violently or explosively in contact with iron, copper, chromium, and most other metals and their salts, and dust. (Hydrogen Peroxide)

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Eye contact.

Toxicity to Animals:

Acute oral toxicity (LD50): 6667 mg/kg (Mouse) (Calculated value for the mixture). Acute dermal toxicity (LD50): 6667 mg/kg (pig) (Calculated value for the mixture).

Chronic Effects on Humans:

CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH [Hydrogen Peroxide]. Classified 3 (Not classifiable for human.) by IARC [Hydrogen Peroxide]. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. [Hydrogen Peroxide]. Mutagenic for bacteria and/or yeast. [Hydrogen Peroxide]. Contains material which may cause damage to the following organs: blood, upper respiratory tract, skin, eyes, central nervous system (CNS).

Other Toxic Effects on Humans:

Very hazardous in case of skin contact (irritant). Hazardous in case of skin contact (corrosive), of eye contact (corrosive), of ingestion, of inhalation (lung corrosive).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:

May cause cancer and may affect genetic material based on animal data. May be tumorigenic. (Hydrogen Peroxide)

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: Skin: Causes severe skin irritation and possible burns. Absorption into skin may affect behavior/central nervous system (tremor, ataxia, convulsions), respiration (dyspnea, pulmonary emboli), brain. Eyes: Causes severe eye irritation, superficial clouding, corneal edema, and may cause burns. Inhalation: Causes respiratory tract irritation with coughing, lacrimation. May cause chemical burns to the respiratory tract. May affect behavior/Central nervous system (insomnia, headache, ataxia, nervous tremors with numb extremities) and may cause ulceration of nasal tissue, and , chemical pneumonia, unconsciousness, and possible death. At high concentrations, respiratory effects may include acute lung damage, and delayed pulmonary edema. May affect blood. Ingestion: Causes gastrointestinal tract irritation with nausea, vomiting, hypermotility, and diarrhea. Causes gastrointestinal tract burns. May affect cardiovascular system and cause vascular collapse and damage. May affect blood (change in leukocyte count, pigmented or nucleated red blood cells). May cause difficulty in swallowing, stomach distension and possible cerebral swelling. May affect behavior/central nervous system (tetany, excitement). Chronic Potential Health Effects: Prolonged or repeated skin contact may cause dermatitis. Repeated contact may also cause corneal damage. Prolonged or repeated ingestion may affect metabolism (weight loss). Prolonged or repeated inhalation may affect respiration, blood. (Hydrogen Peroxide)

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation: Possibly hazardous short/long term degradation products are to be expected.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 5.1: Oxidizing material.

Identification: : Hydrogen peroxide, aqueous solution UNNA: 2014 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:

New York acutely hazardous substances: Hydrogen Peroxide Rhode Island RTK hazardous substances: Hydrogen Peroxide Pennsylvania RTK: Hydrogen Peroxide Florida: Hydrogen Peroxide Minnesota: Hydrogen Peroxide Massachusetts RTK: Hydrogen Peroxide New Jersey: Hydrogen Peroxide TSCA 8(b) inventory: Hydrogen Peroxide SARA 302/304/311/312 extremely hazardous substances: Hydrogen Peroxide CERCLA: Hazardous substances.: Hydrogen Peroxide: 1 lbs. (0.4536 kg);

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada):

CLASS C: Oxidizing material. CLASS E: Corrosive liquid. CLASS F: Dangerously reactive material.

DSCL (EEC):

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 1

Personal Protection:

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

Health: 2

Flammability: 0

Reactivity: 1

Specific hazard:

Protective Equipment:

Gloves. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Face shield.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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MATERIAL SAFETY DATA SHEET

Ashland

Page 001
Date Prepared: 08/18/04
Date Printed: 01/06/07
MSDS No: 306.0186241-003.004

MILLSPERSE 802 ANTISCALANT

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Material Identity

Product Name: MILLSPERSE 802 ANTISCALANT
Product Code:
General or Generic ID: ANTISCALANT

Company

Ashland
Ashland Distribution Co. &
Ashland Specialty Chemical Co.
P. O. Box 2219
Columbus, OH 43216
614-790-3333

Emergency Telephone Number:

1-800-ASHLAND (1-800-274-5263)
24 hours everyday

Regulatory Information Number:
1-800-325-3751

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient(s)	CAS Number	% (by weight)
POLY(MALEIC ACID)	26099-09-2	5.0- 15.0
ORGANIC ACID		1.0- 10.0

3. HAZARDS IDENTIFICATION

Potential Health Effects

Eye

Can cause permanent eye injury. Symptoms include stinging, tearing, redness, and swelling of eyes. Can injure the cornea and cause blindness.

Skin

Can cause permanent skin damage. Symptoms may include redness, burning, and swelling of skin, burns, and other skin damage.

Swallowing

Swallowing this material may be harmful or fatal. Symptoms may include severe stomach and intestinal irritation (nausea, vomiting, diarrhea), abdominal pain, and vomiting of blood. Swallowing this material may cause burns and destroy tissue in the mouth, throat, and digestive tract. Low blood pressure and shock may occur as a result of severe tissue injury.

Inhalation

Breathing this material may be harmful or fatal. Symptoms may include severe irritation and burns to the nose, throat, and respiratory tract.

Symptoms of Exposure

Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include: stomach or intestinal upset (nausea, vomiting, diarrhea), irritation (nose, throat, airways), lung edema (fluid buildup in the lung tissue).

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MATERIAL SAFETY DATA SHEET

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Page 002

Date Prepared: 08/18/04

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MILLSPERSE 802 ANTISCALANT

Target Organ Effects

No data

Developmental Information

Based on the available information, risk to the fetus from maternal exposure to this material cannot be assessed.

Cancer Information

This material is not expected to cause cancer in humans since it did not cause cancer in laboratory animals. This material is not listed as a carcinogen by the International Agency for Research on Cancer, the National Toxicology Program, or the Occupational Safety and Health Administration.

Other Health Effects

No data

Primary Route(s) of Entry

Inhalation, Skin contact, Eye contact, Ingestion - Industrial products are not meant to be swallowed.

4. FIRST AID MEASURES

Eyes

If material gets into the eyes, immediately flush eyes gently with water for at least 15 minutes while holding eyelids apart. If symptoms develop as a result of vapor exposure, immediately move individual away from exposure and into fresh air before flushing as recommended above. Seek immediate medical attention.

Skin

Immediately flush skin with water for at least 15 minutes while removing contaminated clothing and shoes. Seek immediate medical attention. Wash clothing before reuse and discard contaminated shoes.

Swallowing

Seek immediate medical attention. Do not induce vomiting. Vomiting will cause further damage to the mouth and throat. If individual is conscious and alert, immediately rinse mouth with water and give milk or water to drink. If possible, do not leave individual unattended.

Inhalation

If symptoms develop, immediately move individual away from exposure and into fresh air. Seek immediate medical attention; keep person warm and quiet. If person is not breathing, begin artificial respiration. If breathing is difficult, administer oxygen.

Note to Physicians

Preexisting disorders of the following organs (or organ systems) may be aggravated by exposure to this material: skin, lung (for example, asthma-like conditions), eye.

5. FIRE FIGHTING MEASURES

Flash Point

Not applicable

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MATERIAL SAFETY DATA SHEET

Ashland

Page 003

Date Prepared: 08/18/04

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MILLSPERSE 802 ANTISCALANT

Explosive Limit

Not applicable

Autoignition Temperature

No data

Hazardous Products of Combustion

May form: carbon dioxide and carbon monoxide.

Fire and Explosion Hazards

No special fire hazards are known to be associated with this product.

Extinguishing Media

Use an extinguishing media appropriate for surrounding fire.

Fire Fighting Instructions

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 liquid with water used for cooling purposes. Wear full firefighting turn-out gear (full Bunker gear), and respiratory protection (SCBA).

NFPA Rating

Health - 3, Flammability - 0, Reactivity - 1

6. ACCIDENTAL RELEASE MEASURES

Small Spill

Absorb liquid on vermiculite, floor absorbent or other absorbent material. Scoop or scrape up. Put in container for recovery or disposal. May be neutralized with soda ash, TSP, or bicarbonate of soda.

Large Spill

Persons not wearing protective equipment should be excluded from area of spill. Stop spill at source. Dike to prevent spreading. Carefully add lime or sodium carbonate to neutralize acid. Place residue in a container for disposal.

7. HANDLING AND STORAGE

Handling

Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed.

Storage

Product solutions are corrosive to many commonly used materials of construction such as steel, galvanized iron, aluminum, tin and zinc. These solutions can be stored and handled in baked phenolic-lined steel, polyethylene, stainless steel, or reinforced epoxy-plastic equipment. Store in closed containers in a dry, well-ventilated area.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection

Chemical splash goggles and face shield (8" min.) in compliance with OSHA regulations are advised; however, OSHA regulations also permit other type safety glasses. (Consult your industrial hygienist.)

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MATERIAL SAFETY DATA SHEET

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MILLSPERSE 802 ANTISCALANT

Skin Protection

Wear resistant gloves such as: nitrile rubber, polyvinyl chloride, To prevent repeated or prolonged skin contact, wear impervious clothing and boots. Wear acid-resistant apron, or in emergency conditions, acid-resistant clothing and boots.

Respiratory Protections

If overexposure has been determined or documented, a NIOSH/MSHA jointly approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators under specified conditions. (See your safety equipment supplier.) Engineering or administrative controls should be implemented to reduce exposure.

Engineering Controls

Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below level of overexposure (from known, suspected or apparent adverse effects).

Exposure Guidelines

Component

POLY(MALEIC ACID) (26099-09-2)
No exposure limits established

ORGANIC ACID
No exposure limits established

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point

(for component) 212.0 F (100.0 C)

Vapor Pressure

(for component) 17.500 mmHg

Specific Vapor Density

< 1.000 @ AIR=1

Specific Gravity

1.040 @ 77.00 F

Liquid Density

8.654 lbs/gal @ 77.00 F
1.040 kg/l @ 25.00 C

Percent Volatiles

85.0 - 100.0 %

Evaporation Rate

SLOWER THAN ETHYL ETHER

Continued on next page

MATERIAL SAFETY DATA SHEET

Ashland

Page 005

Date Prepared: 08/18/04

Date Printed: 01/06/07

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MILLSPERSE 802 ANTISCALANT

Appearance

CLEAR, STRAW YELLOW LIQUID

State

LIQUID

Physical Form

HOMOGENEOUS SOLUTION

Color

CLEAR, STRAW YELLOW

Odor

No data

pH

1.4 - 2.2

10. STABILITY AND REACTIVITY

Hazardous Polymerization

Product will not undergo hazardous polymerization.

Hazardous Decomposition

May form: carbon dioxide and carbon monoxide.

Chemical Stability

Stable.

Incompatibility

Avoid contact with: nitrites, strong alkalis, strong oxidizing agents, sulphites.

11. TOXICOLOGICAL INFORMATION

This mixture has not been specifically tested.

12. ECOLOGICAL INFORMATION

Ecotoxicological Information

This mixture has not been specifically tested.

13. DISPOSAL CONSIDERATION

Waste Management Information

Dispose of in accordance with all applicable local, state and federal regulations. For assistance with your waste management needs - including disposal, recycling and waste stream reduction, contact Ashland Distribution Company, IC&S Environmental Services Group at 800-531-7106.

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MATERIAL SAFETY DATA SHEET

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MILLSPERSE 802 ANTISCALANT

14. TRANSPORT INFORMATION

DOT Information - 49 CFR 172.101

DOT Description:
NON-REGULATED BY D.O.T.

Container/Mode:
55 GAL DRUM/TRUCK PACKAGE

NOS Component:
None

RQ (Reportable Quantity) - 49 CFR 172.101
Not applicable

Other Transportation Information

The Transport Information may vary with the container and mode of shipment.

15. REGULATORY INFORMATION

US Federal Regulations

TSCA (Toxic Substances Control Act) Status

TSCA (UNITED STATES) The intentional ingredients of this product are listed

CERCLA RQ - 40 CFR 302.4(a)
None

CERCLA RQ - 40 CFR 302.4(b)
This material has a RQ of 100 lbs as a D002 Corrosive unlisted hazardous substance.

SARA 302 Components - 40 CFR 355 Appendix A
None

Section 311/312 Hazard Class - 40 CFR 370.2
Immediate(X) Delayed() Fire() Reactive() Sudden Release of Pressure()

SARA 313 Components - 40 CFR 372.65
None

OSHA Process Safety Management 29 CFR 1910
None listed

EPA Accidental Release Prevention 40 CFR 68
None listed

International Regulations

Inventory Status

DSL (CANADA) The intentional ingredients of this product are listed.

State and Local Regulations

California Proposition 65

None

Continued on next page

MATERIAL SAFETY DATA SHEET

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MILLSPERSE 802 ANTISCALANT

16. OTHER INFORMATION

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.

Material Safety Data Sheet

Section 1: PRODUCT AND COMPANY INFORMATION

Product Name(s): Lafarge Hydrated Lime

Product Identifiers: Hydrated Lime, Slaked Lime, Dolomitic Hydrated Lime, Lime, Caustic Lime, Lime Hydrate, Calcium Hydroxide, Calcium Dihydroxide, Calcium Magnesium Hydroxide, Type N Lime, Type S Lime

Manufacturer:
Lafarge North America Inc.
12018 Sunrise Valley Drive, Suite 500
Reston, VA 20191

Information Telephone Number:
703-480-3600 (9am to 5pm EST)

Emergency Telephone Number:
1-800-451-8346 (3E Hotline)

Product Use: Hydrated lime is used as an additive for mortar, cement, concrete and concrete products. It is also used in soil stabilization, as an anti-stripping agent in asphalt, for pH adjustment, and in other products that are widely used in construction.

Note: This MSDS covers many types of hydrated lime. Individual composition of hazardous constituents will vary between types of hydrated lime.

Section 2: COMPOSITION/INFORMATION ON INGREDIENTS

Component	Percent (By Weight)	CAS Number	OSHA PEL -TWA (mg/m ³)	ACGIH TLV-TWA (mg/m ³)	LD ₅₀ (mouse)	LC ₅₀
Calcium Hydroxide	50-95	1305-62-0	15 (T); 5 (R)	5 (T)	7300mg/kg, oral	NA
Magnesium Hydroxide	0-50	1309-42-8	NA	NA	8500mg/kg, oral	NA
Calcium Oxide	0-5	1305-78-8	5 (T)	2 (T)	3059 mg/kg, intraperitoneal	NA
Magnesium Oxide	0-5	1309-48-4	15 (T)	10 (T)	NA	NA
Calcium Carbonate*	0-3	1317-65-3	15 (T), 5 (R)	3 (R); 10 (T)	NA	NA
Crystalline Silica	0-1	14808-60-7	[(10) / (%SiO ₂ +2)] (R); [(30) / (%SiO ₂ +2)] (T)	0.025 (R)	NA	NA

Note: Exposure limits for components noted with an * contain no asbestos and <1% crystalline silica

Hydrated lime is produced from the slow addition of water to crushed or ground quicklime (calcium oxide) which is produced by burning various forms of limestone. Trace amounts of chemicals may be detected during chemical analysis. For example, hydrated lime may contain trace amounts of iron oxide, aluminum oxide, fluoride compounds, and other trace compounds.

Section 3: HAZARD IDENTIFICATION

WARNING	
	<p style="text-align: center;">Corrosive - Causes severe burns. Toxic - Harmful by inhalation. (Contains crystalline silica)</p> <p style="text-align: center;">Use proper engineering controls, work practices, and personal protective equipment to prevent exposure to wet or dry product.</p> <p style="text-align: center;">Read MSDS for details.</p>
	

Section 3: HAZARD IDENTIFICATION (continued)

Emergency Overview: Hydrated lime is a granular, white or grey, odorless powder. It is not combustible or explosive. A single, short-term exposure to the dry powder presents little or no hazard. Exposure of sufficient duration to hydrated lime can cause serious, potentially irreversible tissue (skin, eye, respiratory tract) damage due to chemical (caustic) burns, including third degree burns.

Potential Health Effects:

Eye Contact: Airborne dust may cause immediate or delayed irritation or inflammation. Eye contact with large amounts of dry powder or with wet hydrated lime can cause moderate eye irritation, chemical burns and blindness. Eye exposures require immediate first aid and medical attention to prevent significant damage to the eye.

Skin Contact: Hydrated lime may cause dry skin, discomfort, irritation, and severe burns.

Burns: Exposure of sufficient duration to wet hydrated lime, or to dry hydrated lime on moist areas of the body, can cause serious, potentially irreversible damage to skin, eye, respiratory and digestive tracts due to chemical (caustic) burns, including third degree burns. A skin exposure may be hazardous even if there is no pain or discomfort.

Inhalation (acute): Breathing dust may cause nose, throat or lung irritation, including choking, depending on the degree of exposure. Inhalation of high levels of dust can cause chemical burns to the nose, throat and lungs.

Inhalation (chronic): Risk of injury depends on duration and level of exposure.

Silicosis: This product contains crystalline silica. Prolonged or repeated inhalation of respirable crystalline silica from this product can cause silicosis, a seriously disabling and fatal lung disease. See Note to Physicians in Section 4 for further information.

Carcinogenicity: Hydrated lime is not listed as a carcinogen by IARC or NTP; however, hydrated lime contains trace amounts of crystalline silica which is classified by IARC and NTP as known human carcinogen.

Autoimmune Disease: Some studies show that exposure to respirable crystalline silica (without silicosis) or that the disease silicosis may be associated with the increased incidence of several autoimmune disorders such as scleroderma (thickening of the skin), systemic lupus erythematosus, rheumatoid arthritis and diseases affecting the kidneys.

Tuberculosis: Silicosis increases the risk of tuberculosis.

Renal Disease: Some studies show an increased incidence of chronic kidney disease and end-stage renal disease in workers exposed to respirable crystalline silica.

Ingestion: Do not ingest hydrated lime. Although ingestion of small quantities of hydrated lime is not known to be harmful, large quantities can cause chemical burns in the mouth, throat, stomach, and digestive tract.

Medical Conditions Aggravated by Exposure: Individuals with lung disease (e.g. bronchitis, emphysema, COPD, pulmonary disease) can be aggravated by exposure.

Section 4: FIRST AID MEASURES

Eye Contact: Rinse eyes thoroughly with water for at least 15 minutes, including under lids, to remove all particles. Seek medical attention for abrasions and burns.

Skin Contact: Wash with cool water and a pH neutral soap or a mild skin detergent. Seek medical attention for rash, burns, irritation, and prolonged unprotected exposures to wet hydrated lime, cement, cement mixtures or liquids from wet cement.

Inhalation: Move person to fresh air. Seek medical attention for discomfort or if coughing or other symptoms do not subside.

Ingestion: Do not induce vomiting. If conscious, have person drink plenty of water. Seek medical attention or contact poison control center immediately.

Note to Physician: The three types of silicosis include:

- Simple chronic silicosis – which results from long-term exposure (more than 20 years) to low amounts of respirable crystalline silica. Nodules of chronic inflammation and scarring provoked by the respirable crystalline silica form in the lungs and chest lymph nodes. This disease may feature breathlessness and may resemble chronic obstructive pulmonary disease (COPD).
- Accelerated silicosis – occurs after exposure to larger amounts of respirable crystalline silica over a shorter period of time (5-15 years). Inflammation, scarring, and symptoms progress faster in accelerated silicosis than in simple silicosis.
- Acute silicosis – results from short-term exposure to very large amounts of respirable crystalline silica. The lungs become very inflamed and may fill with fluid, causing severe shortness of breath and low blood oxygen levels.

Progressive massive fibrosis may occur in simple or accelerated silicosis, but is more common in the accelerated form. Progressive massive fibrosis results from severe scarring and leads to the destruction of normal lung structures.

Section 5: FIREFIGHTING MEASURES

Flashpoint & Method:	Non-combustible	Firefighting Equipment:	Hydrated lime poses no fire-related hazard. A SCBA is recommended to limit exposures to combustion products when fighting any fire.
General Hazard:	Avoid breathing dust. Hydrated lime is caustic.	Combustion Products:	None.
Extinguishing Media:	Use extinguishing media appropriate for surrounding fire.		

Section 6: ACCIDENTAL RELEASE MEASURES

General: Place spilled material into a container. Avoid actions that cause the hydrated lime to become airborne. Avoid inhalation of hydrated lime and contact with skin. Wear appropriate protective equipment as described in Section 8. Scrape wet hydrated lime and place in container. Allow material to dry or solidify before disposal. Do not wash hydrated lime down sewage and drainage systems or into bodies of water (e.g. streams).

Waste Disposal Method: Dispose of hydrated lime according to Federal, State, Provincial and Local regulations.

Section 10: STABILITY AND REACTIVITY

Stability: Stable, but reacts slowly with carbon dioxide to form calcium and magnesium carbonate. Keep dry until use. Hydrated lime may react with water, resulting in a slight release of heat, depending on the amount of lime (Calcium oxide) present. Avoid contact with incompatible materials.

Incompatibility: Wet hydrated lime and cement is alkaline and is incompatible with acids, ammonium salts and aluminum metal. Hydrated lime and cement dissolves in hydrofluoric acid, producing corrosive silicon tetrafluoride gas. Hydrated lime and cement reacts with water to form silicates and calcium hydroxide. Silicates react with powerful oxidizers such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride.

Hazardous Polymerization: None.

Hazardous Decomposition: Hydrated lime will decompose at 540°C to produce calcium oxide (quicklime), magnesium oxide, and water.

Section 11 and 12: TOXICOLOGICAL AND ECOLOGICAL INFORMATION

For questions regarding toxicological and ecological information refer to contact information in Section 1.

Section 13: DISPOSAL CONSIDERATIONS

Dispose of waste and containers in compliance with applicable Federal, State, Provincial and Local regulations.

Section 14: TRANSPORT INFORMATION

This product is not classified as a Hazardous Material under U.S. DOT or Canadian TDG regulations.

Section 15: REGULATORY INFORMATION

OSHA/MSHA Hazard Communication: This product is considered by OSHA/MSHA to be a hazardous chemical and should be included in the employer's hazard communication program.

CERCLA/SUPERFUND: This product is not listed as a CERCLA hazardous substance.

EPCRA SARA Title III: This product has been reviewed according to the EPA Hazard Categories promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 and is considered a hazardous chemical and a delayed health hazard.

EPCRA SARA Section 313: This product contains none of the substances 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.

RCRA: If discarded in its purchased form, this product would not be a hazardous waste either by listing or characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.

TSCA: Hydrated lime and crystalline silica are exempt from reporting under the inventory update rule.

California Proposition 65: Crystalline silica (airborne particulates of respirable size) is known by the State of California to cause cancer.

Section 15: REGULATORY INFORMATION (continued)
WHMIS/DSL:


Products containing crystalline silica and calcium carbonate are classified as D2A, E and are subject to WHMIS requirements.

Section 16: OTHER INFORMATION
Abbreviations:

>	Greater than	NA	Not Applicable
ACGIH	American Conference of Governmental Industrial Hygienists	NFPA	National Fire Protection Association
CAS No	Chemical Abstract Service number	NIOSH	National Institute for Occupational Safety and Health
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act	NTP	National Toxicology Program
		OSHA	Occupational Safety and Health Administration
CFR	Code for Federal Regulations	PEL	Permissible Exposure Limit
CL	Ceiling Limit	pH	Negative log of hydrogen ion
DOT	U.S. Department of Transportation	PPE	Personal Protective Equipment
EST	Eastern Standard Time	R	Respirable Particulate
HEPA	High-Efficiency Particulate Air	RCRA	Resource Conservation and Recovery Act
HMIS	Hazardous Materials Identification System	SARA	Superfund Amendments and Reauthorization Act
		T	Total Particulate
IARC	International Agency for Research on Cancer	TDG	Transportation of Dangerous Goods
LC ₅₀	Lethal Concentration	TLV	Threshold Limit Value
LD ₅₀	Lethal Dose	TWA	Time Weighted Average (8 hour)
mg/m ³	Milligrams per cubic meter	WHMIS	Workplace Hazardous Materials Information System
MSHA	Mine Safety and Health Administration		

This MSDS (Sections 1-16) was revised on March 1, 2011.

An electronic version of this MSDS is available at: www.lafarge-na.com under the Sustainability section.

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NO WARRANTY IS MADE, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE.

Section 1: Identification of the substance or mixture and of the supplier

Product Name:	Propane (Canada)
SDS Number:	775185
Synonyms/Other Means of Identification:	Petroleum Hydrocarbon
Intended Use:	Fuel
Manufacturer:	ConocoPhillips Canada Limited or its Affiliates PO Box 130, 401 9th Ave. SW Calgary, Alberta T2P 2H7 Canada
Emergency Health and Safety Number:	Chemtrec: 800-424-9300 (24 Hours) CANUTEC (613) 996-6666
Customer Service:	403-233-4000
Technical Information:	403-233-4000
SDS Information:	Phone: 855-244-0762 Email: SDS@conocophillips.com URL: www.conocophillips.com

Section 2: Hazard(s) Identification**Classification**

H220 -- Flammable gases -- Category 1

H280 -- Gases under pressure -- Liquefied gas

Label Elements**DANGER****Extremely flammable gas. (H220)*****Gas may reduce oxygen in confined spaces****Contains gas under pressure. May explode if heated. (H280)*****Precautionary Statement(s):**

Keep away from heat/sparks/open flames/hot surfaces. - No smoking. (P210)*

Leaking gas fire: Do not extinguish, unless leak can be stopped safely. (P377)*

Eliminate all ignition sources if safe to do so. (P381)*

Protect from sunlight. Store in a well ventilated place. (P410+P403)*

* (Applicable GHS hazard code.)

Section 3: Composition / Information on Ingredients

Component	CASRN	Concentration ¹
Propane	74-98-6	95-100
Propylene	115-07-1	0-5
Ethyl Mercaptan	75-08-1	0-0.02

¹ All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
Odorized products contain small quantities (<0.1%) ethyl mercaptan as an olfactory indicator.

Section 4: First Aid Measures

Eye Contact: For contact with the liquefied gas, remove contact lenses if present and easy to do, hold eyelids apart and gently flush the affected eye(s) with lukewarm water. Seek immediate medical attention.

Skin Contact: Liquefied gases may cause cryogenic burns or injury. Treat burned or frostbitten skin by flushing or immersing the affected area(s) in lukewarm water. Do not rub affected area. Do not remove clothing that adheres due to freezing. After sensation has returned to the frostbitten skin, keep skin warm, dry, and clean. If blistering occurs, apply a sterile dressing. Seek immediate medical attention.

Inhalation (Breathing): If respiratory symptoms develop, move victim away from source of exposure and into fresh air in a position comfortable for breathing. If breathing is difficult, oxygen or artificial respiration should be administered by qualified personnel. If symptoms persist, seek medical attention.

Ingestion (Swallowing): This material is a gas under normal atmospheric conditions and ingestion is unlikely.

Most important symptoms and effects

Acute: Anesthetic effects at high concentrations.

Delayed: None known or anticipated. See Section 11 for information on effects from chronic exposure, if any.

Notes to Physician: Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in persons exposed to high concentrations of hydrocarbon solvents (e.g., in enclosed spaces or with deliberate abuse). The use of other drugs with less arrhythmogenic potential should be considered. If sympathomimetic drugs are administered, observe for the development of cardiac arrhythmias.

Section 5: Fire-Fighting Measures



NFPA 704 Hazard Class

Health: 2 **Flammability:** 4 **Instability:** 0 (0-Minimal, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

Unusual Fire & Explosion Hazards: Extremely flammable. Contents under pressure. This material can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, mechanical/electrical equipment, and electronic devices such as cell phones, computers, calculators, and pagers which have not been certified as intrinsically safe). Vapors may travel considerable distances to a source of ignition where they can ignite, flash back, or explode. May create vapor/air explosion hazard indoors, in confined spaces, outdoors, or in sewers. If container is not properly cooled, it can rupture in the heat of a fire. Drains can be plugged and valves made inoperable by the formation of ice if rapid evaporation of large quantities of the liquefied gas occurs. Do not allow run-off from fire fighting to enter drains or water courses – may cause explosion hazard in drains and may reignite.

Extinguishing Media: Dry chemical or carbon dioxide is recommended. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces.

Fire Fighting Instructions: For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. If this cannot be done, allow fire to burn. Move undamaged containers from immediate hazard area if it can be done safely. Stay away from ends of container. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done safely.

Hazardous Combustion Products: Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Oxides of nitrogen and sulfur may also be formed.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

Section 6: Accidental Release Measures

Personal Precautions: Extremely flammable. Spillages of liquid product will create a fire hazard and may form an explosive atmosphere. Keep all sources of ignition and hot metal surfaces away from spill/release if safe to do so. The use of explosion-proof electrical equipment is recommended. Beware of accumulation of gas in low areas or contained areas, where explosive concentrations may occur. Prevent from entering drains or any place where accumulation may occur. Ventilate area and allow to evaporate. Stay upwind and away from spill/release. Avoid direct contact with material. For large spillages, notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

Environmental Precautions: Stop spill/release if it can be done safely. Water spray may be useful in minimizing or dispersing vapors. If spill occurs on water notify appropriate authorities and advise shipping of any hazard.

Methods for Containment and Clean-Up: Notify relevant authorities in accordance with all applicable regulations.

Recommended measures are based on the most likely spillage scenarios for this material; however local conditions and regulations may influence or limit the choice of appropriate actions to be taken.

Section 7: Handling and Storage

Precautions for safe handling: Keep away from ignition sources such as heat/sparks/open flame – No smoking. Take precautionary measures against static discharge. Use good personal hygiene practices and wear appropriate personal protective equipment (see section 8).

Contents under pressure. Gas can accumulate in confined spaces and limit oxygen available for breathing. Use only with adequate ventilation. The use of explosion-proof electrical equipment is recommended and may be required (see appropriate fire codes). Refer to NFPA-70 and/or API RP 2003 for specific bonding/grounding requirements. Electrostatic charge may accumulate and create a hazardous condition when handling or processing this material. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Cold burns may occur during filling operations. Containers and delivery lines may become cold enough to present cold burn hazard.

The use of hydrocarbon fuel in an area without adequate ventilation may result in hazardous levels of incomplete combustion products (e.g. carbon monoxide, oxides of sulfur and nitrogen, benzene and other hydrocarbons) and/or dangerously low oxygen levels.

Propane and odorant are heavier than air and will collect and pool along the ground or floor. Odorant, therefore, may not be detectable above the location of propane storage or service (for example, odorant in propane released or leaked into the basement of a dwelling may not be detected above the basement).

WARNING - The intensity of the odorant may fade over prolonged storage or in the presence of rust, when placed initially in new or freshly-cleaned storage vessels, or when exposed to masonry.

Conditions for safe storage: Keep container(s) tightly closed and properly labeled. Use and store this material in cool, dry, well-ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Store only in approved containers. Post area "No Smoking or Open Flame." Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage. Outdoor or detached storage is preferred. Indoor storage should meet OSHA standards and appropriate fire codes.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. Avoid exposing any part of a compressed-gas cylinder to temperatures above 125F(51.6C). Gas cylinders should be stored outdoors or in well ventilated storerooms at no lower than ground level and should be quickly removable in an emergency.

Section 8: Exposure Controls / Personal Protection

Component	ACGIH	OSHA	Other
Propane	TWA: 1000 ppm as Aliphatic Hydrocarbon Gases: Alkane (C1-C4)	TWA: 1000 ppm TWA: 1800 mg/m ³	---
Propylene	TWA: 500 ppm	---	---
Ethyl Mercaptan	TWA: 0.5 ppm	Ceiling: 10 ppm Ceiling: 25 mg/m ³	---

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Eye/Face Protection: The use of eye protection (such as splash goggles) that meets or exceeds ANSI Z.87.1 is recommended when there is potential liquid contact to the eye. Depending on conditions of use, a face shield may be necessary.

Skin/Hand Protection: Wear thermal insulating gloves and face shield or eye protection when working with materials that present thermal hazards (hot or cold).

Respiratory Protection: A NIOSH approved, self-contained breathing apparatus (SCBA) or equivalent operated in a pressure demand or other positive pressure mode should be used in situations of oxygen deficiency (oxygen content less than 19.5 percent), unknown exposure concentrations, or situations that are immediately dangerous to life or health (IDLH).

A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator's use.

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

Section 9: Physical and Chemical Properties

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

Appearance:	Colorless
Physical Form:	Liquefied Gas
Odor:	Rotten egg / sulfurous
Odor Threshold:	No data
pH:	Not applicable
Vapor Pressure:	10000 mm Hg / 200 psia (Reid VP) @ 100°F / 37.8°C
Vapor Density (air=1):	>1
Initial Boiling Point/Range:	-54 to -44 °F / -48 to -42 °C
Melting/Freezing Point:	-303 °F / -186 °C
Solubility in Water:	Slight
Partition Coefficient (n-octanol/water) (Kow):	No data
Specific Gravity (water=1):	0.5-0.6 @ 60°F (15.6°C)

VOC Content(%):	100%
Evaporation Rate (nBuAc=1):	>1
Flash Point:	-163 °F / -108 °C
Test Method:	Pensky-Martens Closed Cup (PMCC), ASTM D93, EPA 1010
Lower Explosive Limits (vol % in air):	2.1
Upper Explosive Limits (vol % in air):	9.5
Auto-ignition Temperature:	851 °F / 455 °C

Section 10: Stability and Reactivity

Stability: Stable under normal ambient and anticipated conditions of use.

Conditions to Avoid: Avoid all possible sources of ignition. Heat will increase pressure in the storage tank.

Materials to Avoid (Incompatible Materials): Avoid contact with acids, aluminum chloride, chlorine, chlorine dioxide, halogens and oxidizing agents.

Hazardous Decomposition Products: Not anticipated under normal conditions of use.

Hazardous Polymerization: Not known to occur.

Section 11: Toxicological Information

Information on Toxicological Effects of Substance/Mixture

<u>Acute Toxicity</u>	<u>Hazard</u>	<u>Additional Information</u>	<u>LC50/LD50 Data</u>
Inhalation	Unlikely to be harmful	Asphyxiant. High concentrations in confined spaces may limit oxygen available for breathing. See Signs and Symptoms.	> 20,000 ppm (gas, estimated)
Skin Absorption	Skin absorption is not anticipated		Not Applicable
Ingestion (Swallowing)	Ingestion is not anticipated		Not Applicable

Aspiration Hazard: Not applicable

Skin Corrosion/Irritation: Not expected to be irritating. Contact with the liquefied or pressurized gas may cause frostbite ("cold" burn).

Serious Eye Damage/Irritation: Not expected to be irritating. Contact with the liquefied or pressurized gas may cause momentary freezing followed by swelling and eye damage.

Signs and Symptoms: Light hydrocarbon gases are simple asphyxiants and can cause anesthetic effects at high concentrations. Symptoms of overexposure, which are reversible if exposure is stopped, can include shortness of breath, drowsiness, headaches, confusion, decreased coordination, visual disturbances and vomiting. Continued exposure can lead to hypoxia (inadequate oxygen), rapid breathing, cyanosis (bluish discoloration of the skin), numbness of the extremities, unconsciousness and death.

Skin Sensitization: Skin contact is not anticipated.

Respiratory Sensitization: Not expected to be a respiratory sensitizer.

Specific Target Organ Toxicity (Single Exposure): Not expected to cause organ effects from single exposure.

Specific Target Organ Toxicity (Repeated Exposure): Not expected to cause organ effects from repeated exposure.

Carcinogenicity: Not expected to cause cancer. This substance is not listed as a carcinogen by IARC, NTP or OSHA.

Germ Cell Mutagenicity: Not expected to cause heritable genetic effects.

Reproductive Toxicity: Not expected to cause reproductive toxicity.

Other Comments: High concentrations may reduce the amount of oxygen available for breathing, especially in confined spaces. Hypoxia (inadequate oxygen) during pregnancy may have adverse effects on the developing fetus.

The odorant, ethyl mercaptan, can be irritating to the eyes, skin and respiratory tract. At high concentrations, a person can temporarily lose the ability to smell ethyl mercaptan. In addition, some individuals may have an impaired sense of smell, which inhibits the detection of the odorant.

Information on Toxicological Effects of Components

Propane

Target Organs: No systemic or neurotoxic effects were noted in rats exposed to concentrations of propane as high as 12,000 ppm for 28 days.

Reproductive Toxicity: No adverse reproductive or developmental effects were observed in rats exposed to propane; no observed adverse effect level = 12,000 ppm.

Section 12: Ecological Information

Toxicity: Petroleum gases will readily evaporate from the surface and would not be expected to have significant adverse effects in the aquatic environment. Classification: No classified hazards.

Persistence and Degradability: The hydrocarbons in this material are expected to be inherently biodegradable. In practice, hydrocarbon gases are not likely to remain in solution long enough for biodegradation to be a significant loss process.

Bioaccumulative Potential: Log Kow values measured for the hydrocarbon gases range from 2.3 for propane to 2.8 for butane and are not regarded as having the potential to bioaccumulate.

Mobility in Soil: Due to the extreme volatility of petroleum gases, air is the only environmental compartment in which these hydrocarbons will be found. In air, these hydrocarbons undergo photodegradation by reaction with hydroxyl radicals with half-lives ranging from 3.2 days for n-butane to 7 days for propane.

Other Adverse Effects: None anticipated.

Section 13: Disposal Considerations

This material is a gas and would not typically be managed as a waste.

Section 14: Transport Information

Canadian (TDG)

Shipping Description:	UN1978, Propane, 2.1
Small Means of Containment	
Package Marking:	Propane, UN1978
Package Labeling:	Flammable gas
Large Means of Containment	
Package Placard/Marking:	Flammable gas / 1978
ERAP Index:	3000
Emergency Response Guide:	115

Note: *These dangerous goods may be handled, offered for transport or transported under the UN number and shipping name UN1075, LIQUEFIED PETROLEUM GASES or GAZ DE PETROLE LIQUEFIES. [TDG Regulations - Schedule 2 - Special Provision 29] For a liquefied petroleum gas that is not odorized the words "Not Odorized" or "Not Odourized" or "Sans odorisant" shall be included in the shipping description immediately after the shipping name. [TDG 3.5(1)(c)(i)(B)]*

U.S. Department of Transportation (DOT)

Shipping Description: UN1978, Propane, 2.1,
Non-Bulk Package Marking: Propane, UN1978
Non-Bulk Package Labeling: Flammable gas
Bulk Package/Placard Marking: Flammable gas / 1978
Packaging - References: 49 CFR: 173.306; 173.304; 173.314 & .315
(Exceptions; Non-bulk; Bulk)

Hazardous Substance: See Section 15 for RQ's
Emergency Response Guide: 115

Note: *For domestic transportation only, UN1075 may be substituted for the UN number shown as long as the substitution is consistent on package markings, shipping papers, and emergency response information. See 49 CFR 172.102 Special Provision 19.*
Containers of NON-ODORIZED liquefied petroleum gas must be marked either NON-ODORIZED or NOT ODORIZED as of September 30, 2006. [49 CFR 172.301(f), 326(d), 330(c) and 338(e)]
The following alternate shipping description order may be used until January 1, 2013:
 Proper Shipping name, Hazard Class or Division, (Subsidiary Hazard if any), UN or NA number, Packing Group
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable
Other shipping description elements may be required for DOT compliance.

International Maritime Dangerous Goods (IMDG)

Shipping Description: UN1978, Propane, 2.1
Non-Bulk Package Marking: Propane, UN1978
Labels: Flammable gas
Placards/Marking (Bulk): Flammable gas / 1978
Packaging - Non-Bulk: P200
EMS: F-D, S-U

International Civil Aviation Org. / International Air Transport Assoc. (ICAO/IATA)

UN/ID #: UN1978
Proper Shipping Name: Propane
Hazard Class/Division: 2.1
Non-Bulk Package Marking: Propane, UN1978
Labels: Flammable gas
ERG Code: 10L
Note: *Special provision A1 applies to this product.*

	LTD. QTY	Passenger Aircraft	Cargo Aircraft Only
Packaging Instruction #:	<i>Forbidden</i>	<i>Forbidden</i>	200
Max. Net Qty. Per Package:	<i>Forbidden</i>	<i>Forbidden</i>	150 kg

Section 15: Regulatory Information

CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds):

This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372.

CERCLA/SARA - Section 311/312 (Title III Hazard Categories)

Acute Health: Yes
Chronic Health: No
Fire Hazard: Yes
Pressure Hazard: No
Reactive Hazard: No

CERCLA/SARA - Section 313 and 40 CFR 372:

This material contains the following chemicals subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR 372:

Component	Concentration ¹	de minimis
Propylene	0-5	1.0%

EPA (CERCLA) Reportable Quantity (in pounds):

EPA's Petroleum Exclusion applies to this material - (CERCLA 101(14)).

California Proposition 65:

This material does not contain any chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm at concentrations that trigger the warning requirements of California Proposition 65.

WARNING: Chemicals known to the State of California to cause cancer, birth defects or other reproductive harm are created by the combustion of Propane.

International Hazard Classification

Canada:

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

WHMIS Hazard Class:

A - Compressed Gas
B1 - Flammable Gases

National Chemical Inventories

All components are either listed on the US TSCA Inventory, or are not regulated under TSCA
All components are either on the DSL, or are exempt from DSL listing requirements

U.S. Export Control Classification Number: EAR99

Section 16: Other Information

Date of Issue: 17-Aug-2012
Status: FINAL
Previous Issue Date: 03-Apr-2012
Revised Sections or Basis for Revision: Regulatory information (Section 15)
SDS Number: 775185

Guide to Abbreviations:

ACGIH = American Conference of Governmental Industrial Hygienists; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; GHS = Globally Harmonized System; IARC = International Agency for Research on Cancer; INSHT = National Institute for Health and Safety at Work; IOPC = International Oil Pollution Compensation; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

Disclaimer of Expressed and implied Warranties:

The information presented in this Material Safety Data Sheet is based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.



255 Norman.
Lachine (Montreal), Que
H8R 1A3

Material Safety Data Sheet

EMERGENCY NUMBERS:

(USA) CHEMTREC : 1(800) 424-9300 (24hrs)
(CAN) CANUTEC : 1(613) 996-6666 (24hrs)
(USA) Anachemia : 1(518) 297-4444
(CAN) Anachemia : 1(514) 489-5711

WHMIS	Protective Clothing	TDG Road/Rail
WHMIS CLASS: D-2A		Not controlled under TDG (Canada). PIN: Not applicable. PG: Not applicable.

Section I. Product Identification and Uses

Product name	SODIUM BORATE, ANHYDROUS	CI#	Not available.
Chemical formula	Na ₂ B ₄ O ₇	CAS#	1330-43-4
Synonyms	Sodium tetraborate, Sodium borate anhydrous, Sodium pyroborate, Borax glass, AC-8266T, MR-103, 80950, 029-940-01, 029-940-02, 029-940-03	Code	AC-8266T
Supplier	Anachemia Canada. 255 Norman. Lachine (Montreal), Que H8R 1A3	Formula weight	201.27
Material uses	For laboratory use only.		
		Supersedes	

Section II. Ingredients

Name	CAS #	%	TLV
1) SODIUM BORATE	1330-43-4	98-100	Exposure limit: ACGIH TWA 2 mg/m ³ ; STEL 6 mg/m ³

Toxicity values of the hazardous ingredients

SODIUM BORATE DECAHYDRATE:
ORAL (LD50): Acute: 2660 mg/kg (Rat). 2000 mg/kg (Mouse). 5330 mg/kg (Guinea pig).
ORAL (LDLo): Acute: 709 mg/kg (Man).

Section III. Physical Data

Physical state and appearance / Odor	Solid. (White crystalline solid. Odorless.)
pH (1% soln/water)	9.3
Odor threshold	Not available.
Percent volatile	0% at 21°C
Freezing point	742°C
Boiling point	Not applicable.
Specific gravity	2.367 (Water = 1)
Vapor density	Not applicable.
Vapor pressure	Not applicable.
Water/oil dist. coeff.	Not applicable.
Evaporation rate	Not applicable.
Solubility	3.1 to 5.8% @ 25°C (in H ₂ O)

Section IV. Fire and Explosion Data

Flash point	Not applicable.
Flammable limits	Not applicable.
Auto-ignition temperature	Not applicable.
Fire degradation products	Oxides of sodium.
Fire extinguishing procedures	Use extinguishing media suitable for surrounding materials. Wear adequate personal protection to prevent contact with material or its combustion products. Self contained breathing apparatus with a full facepiece operated in a pressure demand or other positive pressure mode.
Fire and Explosion Hazards	The product is not sensitive to impact. The product is not sensitive to static discharge. Emits toxic fumes under fire conditions.

Section V. Toxicological Properties

Routes of entry	Inhalation and ingestion. Eye contact. Skin contact. Skin absorption.
Effects of Acute Exposure	Harmful by ingestion, inhalation or skin absorption. Irritant. Target organs: respiratory system, eyes, skin.
Eye	Causes irritation. May cause slight burning sensation due to heat of hydration.
Skin	Causes skin irritation. May cause desquamation. Can be absorbed through damaged skin causing symptoms similar to ingestion.
Inhalation	Material is irritating to mucous membranes and upper respiratory tract. See ingestion.
Ingestion	Causes gastrointestinal irritation. May cause central nervous system depression (headache, nausea, vomiting, dizziness, abdominal pain, etc...), diarrhea, oliguria, anuria, erythema, macular rash, kidney damage, cardiovascular collapse, shock and death if ingested in large amounts. Toxic effects may be delayed.

Section V. Toxicological Properties

Effects of Chronic Overexposure May cause nose irritation, dyspnea, abdominal pain, reversible erythema and/or rash, central nervous system effects, dizziness, macular rash and lung damage. Animal studies show that ingestion of large amounts of borates over prolonged periods of time cause a decrease in sperm production and testicle size in male laboratory animals and developmental effects if fetuses of pregnant female laboratory animals. Carcinogenic effects: Not available. Mutagenic effects: Not available. To the best of our knowledge, the chemical, physical, and toxicity of this substance has not been fully investigated.

Section VI. First Aid Measures

Eye contact Immediately flush eyes with copious quantities of water for at least 15 minutes holding lids apart to ensure flushing of the entire surface. Call a physician.

Skin contact Immediately flush skin with plenty of water and soap for at least 15 minutes while removing contaminated clothing and shoes. If irritation occurs or persists seek medical attention. Wash contaminated clothing before reusing.

Inhalation Remove patient to fresh air. Administer approved oxygen supply if breathing is difficult. Administer artificial respiration or CPR if breathing has ceased. Call a physician.

Ingestion If conscious, wash out mouth with water. Have conscious person drink several glasses of water or milk. Seek immediate medical attention. Never give anything by mouth to an unconscious or convulsing person.

Section VII. Reactivity Data

Stability Stable. Conditions to avoid: High temperatures, sparks, open flames and all other sources of ignition, contamination.

Hazardous decomp. products Not available.

Incompatibility Strong oxidizing agents, acids, metallic salts, alkaloids, zirconium, reducing agents (alkali metals, metals hydrides, etc...).

Reaction Products Product dissolves slowly in water with evolution of heat. Hazardous polymerization will not occur.

Section VIII. Preventive Measures

SODIUM BORATE, ANHYDROUS

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Protective Clothing in case of spill and leak Wear self-contained breathing apparatus, rubber boots and heavy rubber gloves.

Spill and leak Evacuate the area. Sweep up and place in container for disposal. Avoid raising dust. Ventilate area and wash spill site after material pick up is complete. DO NOT empty into drains. DO NOT touch spilled material.

Waste disposal According to all applicable regulations. Harmful to aquatic life at low concentrations. Can be dangerous if allowed to enter drinking water intakes. Do not contaminate domestic or irrigation water supplies, lakes, streams, ponds, or rivers.

Storage and Handling Store in a cool place away from heated areas, sparks, and flame. Store in a well ventilated area. Store away from incompatible materials. Do not add any other material to the container. Do not wash down the drain. Do not breathe dust. Keep container tightly closed and dry. Manipulate under an adequate fume hood. Avoid raising dust. Empty containers may contain a hazardous residue. Handle and open container with care. Minimize dust generation and exposure - use dust mask or appropriate protection. This product must be manipulated by qualified personnel. Do not get in eyes, on skin, or on clothing. Wash well after use. In accordance with good storage and handling practices. Do not allow smoking and food consumption while handling. Product is highly hygroscopic.

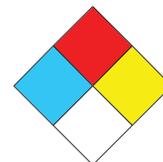
Section IX. Protective Measures

Protective clothing Splash goggles. Impervious gloves, apron, coveralls, and/or other resistant protective clothing. Sufficient to protect skin. A OSHA/MSHA jointly approved respirator is advised in the absence of proper environmental controls. If more than TLV, do not breathe vapor. Wear self-contained breathing apparatus. Do not wear contact lenses. Make eye bath and emergency shower available. Ensure that eyewash station and safety shower is proximal to the work-station location.

Engineering controls Use in a chemical fume hood to keep airborne levels below recommended exposure limits. Do not use in unventilated spaces.

Section X. Other Information

Special Precautions or comments Teratogen! Reproductive toxin! Irritant! Do not breathe dust. Avoid all contact with the product. Avoid prolonged or repeated exposure. Manipulate in a well ventilated area or under an adequate fume hood. Handle and open container with care. Container should be opened only by a technically qualified person.
NOTES TO PHYSICIAN: Gastric lavage with 5% sodium bicarbonate is suggested. This should be followed by saline catharsis. Assure adequate hydration. Borax is not considered an acute poison. After ingestion or absorption into the bloodstream of large amounts (15 grams or more), symptoms may appear after 24-72 hours. Borates are readily dissipated through the urine (70% in the first 24 hours).
RTECS NO: ED4588000 (Sodium borate).



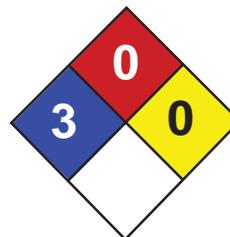
NFPA

Prepared by MSDS Department/Département de F.S..

Validated 23-Sep-2009

Telephone# (514) 489-5711

While the company believes the data set forth herein are accurate as of the date hereof, the company makes no warranty with respect thereto and expressly disclaims all liability for reliance thereon. Such data are offered solely for your consideration, investigation and verification.



Health	3
Fire	1
Reactivity	0
Personal Protection	J

Material Safety Data Sheet

Sodium Cyanide MSDS

Section 1: Chemical Product and Company Identification

Product Name: Sodium Cyanide

Catalog Codes: SLS2314, SLS3736

CAS#: 143-33-9

RTECS: VZ7525000

TSCA: TSCA 8(b) inventory: Sodium Cyanide

CI#: Not available.

Synonym:

Chemical Name: Sodium Cyanide

Chemical Formula: NaCN

Contact Information:

Sciencelab.com, Inc.

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Sodium Cyanide	143-33-9	100

Toxicological Data on Ingredients: Sodium Cyanide: ORAL (LD50): Acute: 6.44 mg/kg [Rat]. DERMAL (LD50): Acute: 10.4 mg/kg [Rabbit].

Section 3: Hazards Identification

Potential Acute Health Effects:

Very hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Hazardous in case of skin contact (permeator). Corrosive to eyes and skin. The amount of tissue damage depends on length of contact. Eye contact can result in corneal damage or blindness. Skin contact can produce inflammation and blistering. Inhalation of dust will produce irritation to gastro-intestinal or respiratory tract, characterized by burning, sneezing and coughing. Severe over-exposure can produce lung damage, choking, unconsciousness or death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to skin, eyes, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated skin exposure can produce local skin destruction, or dermatitis. Repeated inhalation of dust can produce varying degree of respiratory irritation or lung damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

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 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. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:

If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances: Slightly flammable to flammable in presence of acids, of moisture.

Explosion Hazards 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.

Special Remarks on Fire Hazards:

Dangerous on contact with acids, acid fumes, water or steam. It will produce toxic and flammable vapors of CN-H and sodium oxide. Contact with acids and acid salts causes immediate formation of toxic and flammable hydrogen cyanide gas. When heated to decomposition it emits toxic fumes hydrogen cyanide and oxides of nitrogen

Special Remarks on Explosion Hazards: Fusion mixtures of metal cyanides with metal chlorates, perchlorated or nitrates causes a violent explosion

Section 6: Accidental Release Measures

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container.

Large Spill:

Corrosive solid. Poisonous solid. Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal. 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 and Storage

Precautions:

Keep locked up.. Keep container dry. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids, moisture.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 24°C (75.2°F).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

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.

Personal Protection:

Splash goggles. Synthetic apron. Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor and dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:

STEL: 5 (mg/m3) from ACGIH (TLV) [United States] SKIN CEIL: 4.7 from NIOSH CEIL: 5 (mg/m3) from NIOSH Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Granular solid. Flakes solid.)

Odor:

Faint almond-like odor. Odorless when perfectly dry. Emits odor of hydrogen cyanide when damp.

Taste: Not available.

Molecular Weight: 49.01 g/mole

Color: White.

pH (1% soln/water): Not available.

Boiling Point: 1496°C (2724.8°F)

Melting Point: 563°C (1045.4°F)

Critical Temperature: Not available.

Specific Gravity: 1.595 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Vapor Density of Hydrogen Cyanide gas: 0.941

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water.

Solubility:

Soluble in cold water. Slightly soluble in Ethanol

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Excess heat, moisture, incompatibles.

Incompatibility with various substances: Reactive with oxidizing agents, acids, moisture.

Corrosivity:

Corrosive in presence of aluminum. Non-corrosive in presence of glass.

Special Remarks on Reactivity:

Violent reaction with fluorine gas, magnesium, nitrates, nitric acid. Dangerous on contact with acids, acid fumes, water or steam. It will produce toxic and flammable vapors of CN-H and sodium oxide. Cyanide may react with CO₂ in ordinary air to form toxic hydrogen cyanide gas. Strong oxidizers such as acids, acid salts, chlorates, and nitrates. Contact with acids and acid salts causes immediate formation of toxic and flammable hydrogen cyanide gas.

Special Remarks on Corrosivity: Corrosive to aluminum

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:

Acute oral toxicity (LD₅₀): 6.44 mg/kg [Rat]. Acute dermal toxicity (LD₅₀): 10.4 mg/kg [Rabbit].

Chronic Effects on Humans: May cause damage to the following organs: skin, eyes, central nervous system (CNS).

Other Toxic Effects on Humans:

Very hazardous in case of skin contact (irritant), of ingestion, of inhalation. Hazardous in case of skin contact (permeator).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: May cause adverse reproductive effects (maternal and paternal fertility) based on animal data.

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health effects: Skin: May cause itching and irritation. May be fatal if absorbed through injured skin with symptoms similar to those noted for inhalation and ingestion. Eyes: May cause eye irritation and eye damage. Inhalation: May cause respiratory tract irritation. May be fatal if inhaled. The substance inhibits cellular respiration causing metabolic asphyxiation. May cause headache, weakness, dizziness, labored breathing, nausea, vomiting. May be followed by cardiovascular effects, unconsciousness, convulsions, coma, and death Ingestion: May be fatal if swallowed. May cause

gastrointestinal tract irritation with nausea, vomiting. May affect behavior and nervous systems (seizures, convulsions, change in motor activity, headache, dizziness, confusion, weakness stupor, anxiety, agitation, tremors), cardiovascular system, respiration (hyperventilation, pulmonary edema, breathing difficulty, respiratory failure), cardiovascular system (palpitations, rapid heart beat, hypertension, hypotension). Massive doses by produce sudden loss of consciousness and prompt death from respiratory arrest. Smaller but still lethal doses on the breath or vomitus. Chronic Potential Health Effects: Central Nervous system effects (headaches, vertigo, insomnia, memory loss, tremors, fatigue), fatigue, metabolic effects (poor appetite), cardiovascular effects (chest discomfort, palpitations), nerve damage to the eyes, or dermatitis, respiratory tract irritation, eye irritation, or death can occur. may prolong the illness for 1 or more hours. A bitter almond odor may be noted

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 6.1: Poisonous material.

Identification: : Sodium cyanide UNNA: 1689 PG: I

Special Provisions for Transport: Marine Pollutant

Section 15: Other Regulatory Information

Federal and State Regulations:

Connecticut carcinogen reporting list.: Sodium Cyanide Illinois chemical safety act: Sodium Cyanide New York release reporting list: Sodium Cyanide Rhode Island RTK hazardous substances: Sodium Cyanide Pennsylvania RTK: Sodium Cyanide Minnesota: Sodium Cyanide Massachusetts RTK: Sodium Cyanide Massachusetts spill list: Sodium Cyanide New Jersey: Sodium Cyanide New Jersey spill list: Sodium Cyanide Louisiana RTK reporting list: Sodium Cyanide Louisiana spill reporting: Sodium Cyanide California Director's List of Hazardous Substances: Sodium Cyanide TSCA 8(b) inventory: Sodium Cyanide TSCA 4(a) final test rules: Sodium Cyanide TSCA 8(a) PAIR: Sodium Cyanide TSCA 8(d) H and S data reporting: Sodium Cyanide TSCA 12(b) one time export: Sodium Cyanide SARA 302/304/311/312 extremely hazardous substances: Sodium Cyanide CERCLA: Hazardous substances.: Sodium Cyanide: 10 lbs. (4.536 kg)

Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):

CLASS B-6: Reactive and very flammable material. CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS E: Corrosive solid.

DSCL (EEC):

R27/28- Very toxic in contact with skin and if swallowed. R41- Risk of serious damage to eyes. S1/2- Keep locked up and out of the reach of children. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S28- After contact with skin, wash immediately with plenty of water S36/37- Wear suitable protective clothing and gloves. S39- Wear eye/face protection. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). S46- If swallowed, seek medical advice immediately and show this container or label.

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 1

Reactivity: 0

Personal Protection: j

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

Health: 3

Flammability: 0

Reactivity: 0

Specific hazard:

Protective Equipment:

Gloves. Synthetic apron. Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

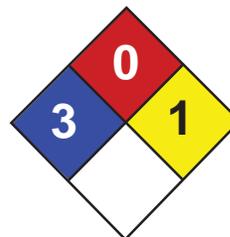
References: Not available.

Other Special Considerations: Not available.

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Last Updated: 06/09/2012 12:00 PM

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Health	3
Fire	0
Reactivity	2
Personal Protection	J

Material Safety Data Sheet

Sodium hydroxide MSDS

Section 1: Chemical Product and Company Identification

Product Name: Sodium hydroxide

Catalog Codes: SLS3298, SLS1081, SLS2503, SLS3925, SLS1705

CAS#: 1310-73-2

RTECS: WB4900000

TSCA: TSCA 8(b) inventory: Sodium hydroxide

CI#: Not available.

Synonym: Caustic Soda

Chemical Name: Sodium Hydroxide

Chemical Formula: NaOH

Contact Information:

Sciencelab.com, Inc.

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Sodium hydroxide	1310-73-2	100

Toxicological Data on Ingredients: Sodium hydroxide LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects:

Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (irritant, corrosive), of ingestion, of inhalation. The amount of tissue damage depends on length of contact. Eye contact can result in corneal damage or blindness. Skin contact can produce inflammation and blistering. Inhalation of dust will produce irritation to gastro-intestinal or respiratory tract, characterized by burning, sneezing and coughing. Severe over-exposure can produce lung damage, choking, unconsciousness or death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS: Not available. **MUTAGENIC EFFECTS:** Mutagenic for mammalian somatic cells.

TERATOGENIC EFFECTS: Not available. **DEVELOPMENTAL TOXICITY:** Not available. The substance may be toxic to mucous membranes, upper respiratory tract, skin, eyes. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated skin exposure can produce local skin destruction, or dermatitis. Repeated inhalation of dust can produce varying degree of respiratory irritation or lung damage.

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 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. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion: Not available.

Fire Hazards in Presence of Various Substances: metals

Explosion Hazards 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. Slightly explosive in presence of heat.

Fire Fighting Media and Instructions: Not available

Special Remarks on Fire Hazards:

sodium hydroxide + zinc metal dust causes ignition of the latter. Under proper conditions of temperature, pressure and state of division, it can ignite or react violently with acetaldehyde, allyl alcohol, allyl chloride, benzene-1,4-diol, chlorine trifluoride, 1,2 dichlorethylene, nitroethane, nitromethane, nitroparaffins, nitropropane, cinnamaldehyde, 2,2-dichloro-3,3-dimethylbutane. Sodium hydroxide in contact with water may generate enough heat to ignite adjacent combustible materials. Phosphorous boiled with NaOH yields mixed phosphines which may ignite spontaneously in air. sodium hydroxide and cinnamaldehyde + heat may cause ignition. Reaction with certain metals releases flammable and explosive hydrogen gas.

Special Remarks on Explosion Hazards:

Sodium hydroxide reacts to form explosive products with ammonia + silver nitrate. Benzene extract of allyl benzenesulfonate prepared from allyl alcohol, and benzene sulfonyl chloride in presence of aqueous sodium hydroxide, under vacuum distillation, residue darkened and exploded. Sodium Hydroxide + impure tetrahydrofuran, which can contain peroxides, can

cause serious explosions. Dry mixtures of sodium hydroxide and sodium tetrahydroborate liberate hydrogen explosively at 230-270 deg. C. Sodium Hydroxide reacts with sodium salt of trichlorophenol + methyl alcohol + trichlorobenzene + heat to cause an explosion.

Section 6: Accidental Release Measures

Small Spill:

Use appropriate tools to put the spilled solid in a convenient waste disposal container. If necessary: Neutralize the residue with a dilute solution of acetic acid.

Large Spill:

Corrosive solid. Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of acetic acid. 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 and Storage

Precautions:

Keep container dry. Do not breathe dust. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If you feel unwell, seek medical attention and show the label when possible. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, reducing agents, metals, acids, alkalis, moisture.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area. Hygroscopic. Deliquescent.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:

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.

Personal Protection:

Splash goggles. Synthetic apron. Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor and dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:

STEL: 2 (mg/m³) from ACGIH (TLV) [United States] TWA: 2 CEIL: 2 (mg/m³) from OSHA (PEL) [United States] CEIL: 2 (mg/m³) from NIOSH Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Deliquescent solid.)

Odor: Odorless.

Taste: Not available.

Molecular Weight: 40 g/mole

Color: White.

pH (1% soln/water): 13.5 [Basic.]
Boiling Point: 1388°C (2530.4°F)
Melting Point: 323°C (613.4°F)
Critical Temperature: Not available.
Specific Gravity: 2.13 (Water = 1)
Vapor Pressure: Not applicable.
Vapor Density: Not available.
Volatility: Not available.
Odor Threshold: Not available.
Water/Oil Dist. Coeff.: Not available.
Ionicity (in Water): Not available.
Dispersion Properties: See solubility in water.
Solubility: Easily soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials, moisture, moist air

Incompatibility with various substances:

Highly reactive with metals. Reactive with oxidizing agents, reducing agents, acids, alkalis, moisture.

Corrosivity: Not available.

Special Remarks on Reactivity:

Hygroscopic. Much heat is evolved when solid material is dissolved in water. Therefore cold water and caution must be used for this process. Sodium hydroxide solution and octanol + diborane during a work-up of a reaction mixture of oxime and diborane in tetrahydrofuran is very exothermic, a mild explosion being noted on one occasion. Reactive with water, acids (mineral, non-oxidizing, e.g. hydrochloric, hydrofluoric acid, muriatic acid, phosphoric), acids (mineral, oxidizing e.g. chromic acid, hypochlorous acid, nitric acid, sulfuric acid), acids (organic e.g. acetic acid, benzoic acid, formic acid, methanoic acid, oxalic acid), aldehydes (e.g. acetaldehyde, acrolein, chloral hydrate, formaldehyde), carbamates (e.g. carbanolate, carbofuran), esters (e.g. butyl acetate, ethyl acetate, propyl formate), halogenated organics (dibromoethane, hexachlorobenzene, methyl chloride, trichloroethylene), isocyanates (e.g. methyl isocyanate), ketones (acetone, acetophenone, MEK, MIBK), acid chlorides, strong bases, strong oxidizing agents, strong reducing agents, flammable liquids, powdered metals and metals (i.e. aluminum, tin, zinc, hafnium, raney nickel), metals (alkali and alkaline e.g. cesium, potassium, sodium), metal compounds (toxic e.g. beryllium, lead acetate, nickel carbonyl, tetraethyl lead), nitrides (e.g. potassium nitride, sodium nitride), nitriles (e.g. acetonitrile, methyl cyanide), nitro compounds (organic e.g. nitrobenzene, nitromethane), acetic anhydride, chlorohydrin, chlorosulfonic acid, ethylene cyanohydrin, glyoxal, hydrosulfuric acid, oleum, propiolactone, acylonitrile, phosphorus pentoxide, chloroethanol, chloroform-methanol, tetrahydroborate, cyanogen azide, 1,2,4,5 tetrachlorobenzene, cinnamaldehyde. Reacts with formaldehyde hydroxide to yield formic acid, and hydrogen.

Special Remarks on Corrosivity: Very caustic to aluminum and other metals in presence of moisture.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:

LD50: Not available. LC50: Not available.

Chronic Effects on Humans:

MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. May cause damage to the following organs: mucous membranes, upper respiratory tract, skin, eyes.

Other Toxic Effects on Humans:

Extremely hazardous in case of inhalation (lung corrosive). Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (corrosive), of ingestion, .

Special Remarks on Toxicity to Animals:

Lowest Published Lethal Dose: LDL [Rabbit] - Route: Oral; Dose: 500 mg/kg

Special Remarks on Chronic Effects on Humans: May affect genetic material. Investigation as a mutagen (cytogenetic analysis)

Special Remarks on other Toxic Effects on Humans:**Section 12: Ecological Information**

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations**Waste Disposal:**

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Class 8: Corrosive material

Identification: : Sodium hydroxide, solid UNNA: 1823 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information**Federal and State Regulations:**

Illinois toxic substances disclosure to employee act: Sodium hydroxide Illinois chemical safety act: Sodium hydroxide New York release reporting list: Sodium hydroxide Rhode Island RTK hazardous substances: Sodium hydroxide Pennsylvania RTK: Sodium hydroxide Minnesota: Sodium hydroxide Massachusetts RTK: Sodium hydroxide New Jersey: Sodium hydroxide Louisiana spill reporting: Sodium hydroxide California Director's List of Hazardous Substances: Sodium hydroxide TSCA 8(b) inventory: Sodium hydroxide CERCLA: Hazardous substances.: Sodium hydroxide: 1000 lbs. (453.6 kg)

Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): CLASS E: Corrosive solid.

DSCL (EEC):

R35- Causes severe burns. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S37/39- Wear suitable gloves and eye/face protection. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 2

Personal Protection: j

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

Health: 3

Flammability: 0

Reactivity: 1

Specific hazard:

Protective Equipment:

Gloves. Synthetic apron. Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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- Skin Contact / Absorption**..... Causes severe skin irritation with blistering and ulceration.
- Eye Contact**..... Causes severe irritation of the mucous membranes of the eyes. May cause severe eye damage.
- Ingestion**..... Burning of the mouth and throat, abdominal cramps, nausea, vomiting, diarrhea, shock. May lead to convulsions, coma, and even death.
- Exposure Limits**..... ACGIH/TLV-TWA: 0.5ppm (chlorine)

Section 04 - First Aid Measures

- Inhalation**..... Remove victim to fresh air. Give artificial respiration only if breathing has stopped. If breathing is difficult, give oxygen. Seek immediate medical attention.
- Skin Contact / Absorption**..... Remove contaminated clothing. Wash affected area with soap and water. Seek medical attention if irritation occurs or persists.
- Eye Contact**..... Flush immediately with water for at least 20 minutes. Forcibly hold eyelids apart to ensure complete irrigation of eye tissue. Seek immediate medical attention.
- Ingestion**..... Do not induce vomiting. If vomiting occurs, lean victim forward to prevent breathing in vomitus. Give large amounts of water. Do not give anything by mouth to an unconscious or convulsing person. Seek immediate medical attention.
- Additional Information**..... Not available

Section 05 - Fire Fighting

- Conditions of Flammability**..... Non-flammable
- Means of Extinction**..... Product does not burn. Use appropriate extinguishing media for material that is supplying the fuel to the fire.
- Flash Point**..... Not applicable
- Auto-ignition Temperature**..... Not applicable
- Upper Flammable Limit** Not applicable



- Lower Flammable Limit.....** Not applicable
- Hazardous Combustible Products...** Decomposition may produce chlorine gas and/or hydrogen chloride gas,
- Special Fire Fighting Procedures.....** Wear NIOSH-approved self-contained breathing apparatus and protective clothing.
- Explosion Hazards.....** Pressure buildup in containers could result in an explosion when heated or in contact with acidic fumes. Vigorous reaction with oxidizable organic materials may result in a fire.

Section 06 - Accidental Release Measures

- Leak / Spill.....** Wear appropriate personal protective equipment. Ventilate area. Stop or reduce leak if safe to do so. Restrict access to spill area until clean up is complete. Prevent material from entering sewers, waterways or confined spaces. Soak up smaller spills with absorbent material that does not react with spilled material. Flush with water to remove any residue.
- Deactivating Materials.....** Spills can be carefully neutralized first with sodium sulphite, sodium metabisulphite or other dechlorination agent for no chlorine residual, then a pH adjustment may be required with hydrochloric acid until the pH is 7. Note neutralization reactions may produce heat so necessary precautions must be taken. Local regulatory agencies should also be contacted for proper disposal.

Section 07 - Handling and Storage

- Handling Procedures.....** Use proper equipment for lifting and transporting all containers. Use sensible industrial hygiene and housekeeping practices. Wash thoroughly after handling. Avoid all situations that could lead to harmful exposure.
- Storage Requirements.....** Store in a cool, dry, well-ventilated place. Keep container tightly closed, and away from incompatible materials. Venting of containers is advisable.

Section 08 - Personal Protection and Exposure Controls

Protective Equipment

- Eyes.....** Chemical goggles, full-face shield, or a full-face respirator is to be worn at all times when product is handled. Contact lenses should not be worn; they may contribute to severe eye injury.
- Respiratory.....** A NIOSH-approved respirator suitable for chlorine is recommended. Where a higher level of protection is required, use a self-contained breathing apparatus.



- Gloves**..... Impervious gloves of chemically resistant material (rubber or PVC) should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse.
- Clothing**..... Body suits, aprons, and/or coveralls of chemical resistant material should be worn at all times. Wash contaminated clothing and dry thoroughly before reuse.
- Footwear**..... Impervious boots of chemically resistant material should be worn at all times.

Engineering Controls

- Ventilation Requirements**..... Mechanical ventilation (dilution or local exhaust), process or personnel enclosure and control of process conditions should be provided. Supply sufficient replacement air to make up for air removed by exhaust systems.
- Other**..... Emergency shower and eyewash should be in close proximity.

Section 09 - Physical and Chemical Properties

- Physical State**..... Liquid
- Odor and Appearance**..... Strong chlorine odour. Clear, greenish-yellow solution.
- Odor Threshold**..... Not available
- Specific Gravity (Water=1)**..... 1.17 at 20°C (12% trade)
- Vapor Pressure (mm Hg, 20C)**..... 12.1mm Hg at 20°C (12.5 wt %)
- Vapor Density (Air=1)**..... Not available
- Evaporation Rate**..... Not available
- Boiling Point**..... Slowly decomposes above 40°C.
- Freeze/Melting Point**..... ~ -15°C (12% trade)
- pH**..... < 12
- Water/Oil Distribution Coefficient**... Not available
- Bulk Density**..... Not available
- % Volatiles by Volume**..... Not available



Solubility in Water..... Complete

Molecular Formula..... NaOCl

Molecular Weight..... 74.44

Section 10 - Stability and Reactivity

Stability..... Unstable at temperatures above 40°C, in sunlight, and in contact with acid.

Incompatibility..... Incompatible with strong acids, ammonia, oxidizable materials, nickel, copper, tin, manganese, and iron.

Hazardous Products of Decomposition.. Chlorine (by reaction with acids), oxygen (by reaction with nickel, copper, tin, manganese, iron), sodium chloride, sodium chlorate, with increased temperature.

Polymerization..... Will not occur

Section 11 - Toxicological Information

Irritancy..... Strong irritant

Sensitization..... Not available

Chronic/Acute Effects..... If over-exposed to the solution, there will be constant irritation of the eyes, nose, and throat.

Synergistic Materials..... Not available

Animal Toxicity Data..... LD₅₀(oral, rat): 8910mg/kg (undiluted sodium hypochlorite)

Carcinogenicity..... Not considered to be carcinogenic (IARC and ACGIH).

Reproductive Toxicity..... Not available

Teratogenicity..... Not available

Mutagenicity..... Not available

Section 12 - Ecological Information

Fish Toxicity..... Not available



Biodegradability..... Not available

Environmental Effects..... Not available

Section 13 - Disposal Consideration

Waste Disposal..... Dispose in accordance with all federal, provincial, and/or local regulations including the Canadian Environmental Protection Act.

Section 14 - Transportation Information

TDG Classification

Class..... 8 (not regulated at solutions below 7%)

Group..... III (not regulated at solutions below 7%)

PIN Number..... UN 1791(not regulated at solutions below 7%)

Other..... Secure containers (full and/or empty) with suitable hold down devises during shipment.

Section 15 - Regulatory Information

WHMIS Classification.....E

NOTE: THE PRODUCT LISTED ON THIS MSDS HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CANADIAN CONTROLLED PRODUCTS REGULATIONS. THIS MSDS CONTAINS ALL INFORMATION REQUIRED BY THOSE REGULATIONS.

NSF Certification.....Product is certified under NSF/ANSI Standard 60 for disinfection and oxidation at a maximum dosage for the following:

- sodium hypochlorite 5%: 200mg/L
- sodium hypochlorite 6%: 175mg/L
- sodium hypochlorite 7%: 161mg/L
- sodium hypochlorite 8%: 146mg/L
- sodium hypochlorite 9%: 131mg/L
- sodium hypochlorite 10%: 116mg/L
- sodium hypochlorite 11%: 101mg/L
- sodium hypochlorite 12%: 87mg/L
- sodium hypochlorite 13%: 82mg/L
- sodium hypochlorite 14%: 76mg/L
- sodium hypochlorite 15%: 70mg/L
- sodium hypochlorite 16%: 66mg/L
- sodium hypochlorite 17%: 62mg/L
- sodium hypochlorite 18%: 58mg/L
- sodium hypochlorite 19%: 54mg/L
- sodium hypochlorite 20%: 50mg/L



Sanitizer Use: to obtain 10 liters of a 200 mg/L solution as available chlorine, use 16.7 mL of Hypochlor-12 for each 10 liters of clean, potable water.

Section 16 - Other Information

Note: The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations.

Attention: Receiver of the chemical goods / MSDS coordinator

As part of our commitment to the Canadian Association of Chemical Distributors (CACD) Responsible Distribution[®] initiative, ClearTech Industries Inc. and its associated companies require, as a condition of sale, that you forward the attached Material Safety Data Sheet(s) to all affected employees, customers, and end-users. ClearTech will send any available supplementary handling, health, and safety information to you at your request.

If you have any questions or concerns please call our customer service or technical service department.

ClearTech Industries Inc. - Locations

Corporate Head Office: 2302 Hanselman Avenue, Saskatoon, SK, S7L 5Z3

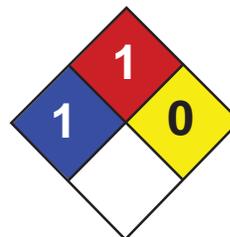
Phone: 306-664-2522

Fax: 306-665-6216

www.ClearTech.ca

Location	Address	Postal Code	Phone Number	Fax Number
Richmond, B.C.	12431 Horseshoe Way	V7A 4X8	604-272-4000	604-272-4596
Calgary, AB.	5516E - 40 th St. S.E.	T2C 2A1	403-279-1096	403-236-0989
Edmonton, AB.	11750 - 180 th Street	T5S 1N7	780-452-6000	780-452-4600
Saskatoon, SK.	2302 Hanselman Avenue	S7L 5Z3	306-933-0177	306-933-3282
Regina, SK.	555 Henderson Drive	S42 5X2	306-721-7737	306-721-8611
Winnipeg, MB.	340 Saulteaux Crescent	R3J 3T2	204-987-9777	204-987-9770
Mississauga, ON.	7480 Bath Road	L4T 1L2	905-612-0566	905-612-0575

24 Hour Emergency Number - All Locations - 306-664-2522



Health	1
Fire	1
Reactivity	0
Personal Protection	E

Material Safety Data Sheet

Ethylenediaminetetraacetic Acid Tetrasodium Salt MSDS

Section 1: Chemical Product and Company Identification

Product Name: Ethylenediaminetetraacetic Acid Tetrasodium Salt

Catalog Codes: SLE2284

CAS#: 10378-23-1

RTECS: AH5075000 (For CAS no. 64-02-8 known as EDTA Tetrasodium salt, anhydrous)

TSCA: TSCA 8(b) inventory: No products were found.

CI#: Not available.

Synonym: Versene, Kalex, Hampene, Dissolvine; EDTA tetrasodium salt dihydrate; Tetrasodium EDTA dihydrate; Tetrasodium salt EDTA dihydrate; Tetrasodium salt of EDTA, dihydrate; Tetrasodium salt of ethylenediaminetetraacetic acid, dihydrate; Sodium salt of ethylenediaminetetraacetic acid, dihydrate; Sodium ethylenediaminetetraacetate, dihydrate; Sodium ethylenediaminetetraacetic acid, dihydrate; Sodium EDTA, dihydrate; Edetate sodium dihydrate; Edetic acid tetrasodium salt, dihydrate; Endrate tetrasodium; Ethylenebis(iminodiacetic acid) tetrasodium salt, dihydrate; Ethylenediaminetetraacetic acid, tetrasodium salt, dihydrate; Edathaniltetrasodium, dihydrate; N, N'-Ethylenediaminediacetic acid tetrasodium salt.

Chemical Name: Acetic acid, (ethylenedinitrilo)tetra-, tetrasodium salt, dihydrate

Chemical Formula: C₁₀H₁₂N₂Na₄O₈.2H₂O

Contact Information:

Sciencelab.com, Inc.

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Ethylenediaminetetraacetic acid tetrasodium salt	10378-23-1	100

Toxicological Data on Ingredients: Ethylenediaminetetraacetic acid tetrasodium salt: ORAL (LD50): Acute: >2000 mg/kg [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects: Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects: CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to upper respiratory tract, skin, eyes. Repeated or prolonged exposure to the substance can produce target organs damage.

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.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops. Cold water may be used.

Serious Skin Contact: Not available.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation: Not available.

Ingestion: Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: CLOSED CUP: Higher than 93.3°C (200°F).

Flammable Limits: Not available.

Products of Combustion: These products are carbon oxides (CO, CO₂), nitrogen oxides (NO, NO₂...). Some metallic oxides.

Fire Hazards in Presence of Various Substances: Slightly flammable to flammable in presence of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances: Slightly explosive in presence of open flames and sparks. Non-explosive in presence of shocks.

Fire Fighting Media and Instructions: SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: As with most organic solids, fire is possible at elevated temperatures

Special Remarks on Explosion Hazards: Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Section 6: Accidental Release Measures

Small Spill: Use appropriate tools to put the spilled solid in a convenient waste disposal container. If necessary: Neutralize the residue with a dilute solution of acetic acid. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

Large Spill: Use a shovel to put the material into a convenient waste disposal container. Neutralize the residue with a dilute solution of acetic acid. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

Section 7: Handling and Storage

Precautions: Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe dust. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, metals.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8: Exposure Controls/Personal Protection

Engineering Controls: 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.

Personal Protection: Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill: Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: Not available.

Section 9: Physical and Chemical Properties

Physical state and appearance: Solid. (Crystalline solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 416.23 g/mole

Color: White.

pH (1% soln/water): 11.3 [Basic.]

Boiling Point: Not available.

Melting Point: Not available.

Critical Temperature: Not available.

Specific Gravity: Bulk Density: 0.77 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water.

Solubility: Soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Not available.

Incompatibility with various substances: Reactive with oxidizing agents, metals.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Avoid contact with aluminum, copper, copper alloys, zinc, and nickel, and strong oxidizers.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Eye contact. Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): >2000 mg/kg [Rat].

Chronic Effects on Humans: May cause damage to the following organs: upper respiratory tract, skin, eyes.

Other Toxic Effects on Humans: Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Acute Potential Health effects: Skin: May cause skin irritation. Eyes: May cause eye irritation. Inhalation: May cause irritation of the respiratory tract. Ingestion: May cause gastrointestinal tract irritation. The toxicological properties of this substance have not been fully investigated.

Section 12: Ecological Information

Ecotoxicity: Ecotoxicity in water (LC50): 760 mg/l 96 hours [Bull gill sunfish]. 59.8 mg/l 96 hours [Fathead Minnow].

BOD5 and COD: Not available.

Products of Biodegradation: Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The product itself and its products of degradation are not toxic.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal: Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

Section 15: Other Regulatory Information

Federal and State Regulations: No products were found.

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada): Not controlled under WHMIS (Canada).

DSCL (EEC): This product is not classified according to the EU regulations. Not applicable.

HMIS (U.S.A.):

Health Hazard: 1

Fire Hazard: 1

Reactivity: 0

Personal Protection: E

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

Health: 1

Flammability: 1

Reactivity: 0

Specific hazard:

Protective Equipment: Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Safety glasses.

Section 16: Other Information

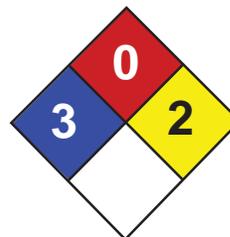
References: Not available.

Other Special Considerations: Not available.

Created: 10/09/2005 05:29 PM

Last Updated: 11/01/2010 12:00 PM

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Health	3
Fire	0
Reactivity	2
Personal Protection	

Material Safety Data Sheet

Sulfuric acid MSDS

Section 1: Chemical Product and Company Identification

Product Name: Sulfuric acid

Catalog Codes: SLS2539, SLS1741, SLS3166, SLS2371, SLS3793

CAS#: 7664-93-9

RTECS: WS5600000

TSCA: TSCA 8(b) inventory: Sulfuric acid

CI#: Not applicable.

Synonym: Oil of Vitriol; Sulfuric Acid

Chemical Name: Hydrogen sulfate

Chemical Formula: H₂-SO₄

Contact Information:

Sciencelab.com, Inc.

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Sulfuric acid	7664-93-9	95 - 98

Toxicological Data on Ingredients: Sulfuric acid: ORAL (LD50): Acute: 2140 mg/kg [Rat.]. VAPOR (LC50): Acute: 510 mg/m 2 hours [Rat]. 320 mg/m 2 hours [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:

Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (irritant, corrosive), of ingestion, of inhalation. Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS: Classified 1 (Proven for human.) by IARC, + (Proven.) by OSHA. Classified A2 (Suspected for human.) by ACGIH. **MUTAGENIC EFFECTS:** Not available. **TERATOGENIC EFFECTS:** Not available. **DEVELOPMENTAL TOXICITY:** Not available. The substance may be toxic to kidneys, lungs, heart, cardiovascular system, upper respiratory tract, eyes, teeth. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged

contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

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 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. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Non-flammable.

Auto-Ignition Temperature: Not applicable.

Flash Points: Not applicable.

Flammable Limits: Not applicable.

Products of Combustion:

Products of combustion are not available since material is non-flammable. However, products of decomposition include fumes of oxides of sulfur. Will react with water or steam to produce toxic and corrosive fumes. Reacts with carbonates to generate carbon dioxide gas. Reacts with cyanides and sulfides to form poisonous hydrogen cyanide and hydrogen sulfide respectively.

Fire Hazards in Presence of Various Substances: Combustible materials

Explosion Hazards 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. Slightly explosive in presence of oxidizing materials.

Fire Fighting Media and Instructions: Not applicable.

Special Remarks on Fire Hazards:

Metal acetylides (Monocesium and Monorubidium), and carbides ignite with concentrated sulfuric acid. White Phosphorous + boiling Sulfuric acid or its vapor ignites on contact. May ignite other combustible materials. May cause fire when sulfuric acid is mixed with Cyclopentadiene, cyclopentanone oxime, nitroaryl amines, hexalithium disilicide, phosphorous (III) oxide, and oxidizing agents such as chlorates, halogens, permanganates.

Special Remarks on Explosion Hazards:

Mixtures of sulfuric acid and any of the following can explode: p-nitrotoluene, pentasilver trihydroxydiaminophosphate, perchlorates, alcohols with strong hydrogen peroxide, ammonium tetraperoxychromate, mercuric nitrite, potassium chlorate, potassium permanganate with potassium chloride, carbides, nitro compounds, nitrates, carbides, phosphorous, iodides, picrates, fulminates, dienes, alcohols (when heated) Nitramide decomposes explosively on contact with concentrated sulfuric acid. 1,3,5-Trinitrosohexahydro-1,3,5-triazine + sulfuric acid causes explosive decomposition.

Section 6: Accidental Release Measures**Small Spill:**

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of sodium carbonate.

Large Spill:

Corrosive liquid. Poisonous liquid. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of sodium carbonate. 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 and Storage**Precautions:**

Keep locked up.. Keep container dry. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, reducing agents, combustible materials, organic materials, metals, acids, alkalis, moisture. May corrode metallic surfaces. Store in a metallic or coated fiberboard drum using a strong polyethylene inner package.

Storage:

Hygroscopic. Reacts violently with water. Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 23°C (73.4°F).

Section 8: Exposure Controls/Personal Protection**Engineering Controls:**

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:

Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:

TWA: 1 STEL: 3 (mg/m³) [Australia] Inhalation TWA: 1 (mg/m³) from OSHA (PEL) [United States] Inhalation TWA: 1 STEL: 3 (mg/m³) from ACGIH (TLV) [United States] [1999] Inhalation TWA: 1 (mg/m³) from NIOSH [United States] Inhalation TWA: 1 (mg/m³) [United Kingdom (UK)] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid. (Thick oily liquid.)

Odor: Odorless, but has a choking odor when hot.

Taste: Marked acid taste. (Strong.)

Molecular Weight: 98.08 g/mole

Color: Colorless.

pH (1% soln/water): Acidic.

Boiling Point:

270°C (518°F) - 340 deg. C Decomposes at 340 deg. C

Melting Point: -35°C (-31°F) to 10.36 deg. C (93% to 100% purity)

Critical Temperature: Not available.

Specific Gravity: 1.84 (Water = 1)

Vapor Pressure: Not available.

Vapor Density: 3.4 (Air = 1)

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water.

Solubility:

Easily soluble in cold water. Sulfuric is soluble in water with liberation of much heat. Soluble in ethyl alcohol.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability:

Conditions to Avoid: Incompatible materials, excess heat, combustible material materials, organic materials, exposure to moist air or water, oxidizers, amines, bases. Always add the acid to water, never the reverse.

Incompatibility with various substances:

Reactive with oxidizing agents, reducing agents, combustible materials, organic materials, metals, acids, alkalis, moisture.

Corrosivity:

Extremely corrosive in presence of aluminum, of copper, of stainless steel(316). Highly corrosive in presence of stainless steel(304). Non-corrosive in presence of glass.

Special Remarks on Reactivity:

Hygroscopic. Strong oxidizer. Reacts violently with water and alcohol especially when water is added to the product. Incompatible (can react explosively or dangerously) with the following: ACETIC ACID, ACRYLIC ACID, AMMONIUM HYDROXIDE, CRESOL, CUMENE, DICHLOROETHYL ETHER, ETHYLENE CYANOHYDRIN, ETHYLENEIMINE, NITRIC ACID, 2-NITROPROPANE, PROPYLENE OXIDE, SULFOLANE, VINYLIDENE CHLORIDE, DIETHYLENE GLYCOL MONOMETHYL ETHER, ETHYL ACETATE, ETHYLENE CYANOHYDRIN, ETHYLENE GLYCOL MONOETHYL ETHER ACETATE, GLYOXAL, METHYL ETHYL KETONE, dehydrating agents, organic materials, moisture (water), Acetic anhydride, Acetone, cyanohydrin, Acetone+nitric acid, Acetone + potassium dichromate, Acetonitrile, Acrolein, Acrylonitrile, Acrylonitrile +water, Alcohols + hydrogen peroxide, ally compounds such as Allyl alcohol, and Allyl Chloride, 2-Aminoethanol, Ammonium hydroxide, Ammonium triperchromate, Aniline, Bromate + metals, Bromine pentafluoride, n-Butyraldehyde, Carbides, Cesium acetylene carbide, Chlorates, Cyclopentanone oxime, chlorinates, Chlorates + metals, Chlorine trifluoride, Chlorosulfonic acid, 2-cyano-4-nitrobenzenediazonium hydrogen sulfate, Cuprous nitride, p-chloronitrobenzene, 1,5-Dinitronaphthlene +

sulfur, Diisobutylene, p-dimethylaminobenzaldehyde, 1,3-Diazidobenzene, Dimethylbenzylcarbinol + hydrogen peroxide, Epichlorohydrin, Ethyl alcohol + hydrogen peroxide, Ethylene diamine, Ethylene glycol and other glycols, , Ethylenimine, Fulminates, hydrogen peroxide, Hydrochloric acid, Hydrofluoric acid, Iodine heptafluoride, Indane + nitric acid, Iron, Isoprene, Lithium silicide, Mercuric nitride, Mesityl oxide, Mercury nitride, Metals (powdered), Nitromethane, Nitric acid + glycerides, p-Nitrotoluene, Pentasilver trihydroxydiaminophosphate, Perchlorates, Perchloric acid, Permanganates + benzene, 1-Phenyl-2-methylpropyl alcohol + hydrogen peroxide, Phosphorus, Phosphorus isocyanate, Picrates, Potassium tert-butoxide, Potassium chlorate, Potassium Permanganate and other permanganates, halogens, amines, Potassium Permanganate + Potassium chloride, Potassium Permanganate + water, Propiolactone (beta)-, Pyridine, Rubidium acetelyene carbide, Silver permanganate, Sodium, Sodium carbonate, sodium hydroxide, Steel, styrene monomer, toluene + nitric acid, Vinyl acetate, Thallium (I) azidodithiocarbonate, Zinc chlorate, Zinc Iodide, azides, carbonates, cyanides, sulfides, sulfites, alkali hydrides, carboxylic acid anhydrides, nitriles, olefinic organics, aqueous acids, cyclopentadiene, cyano-alcohols, metal acetylides, Hydrogen gas is generated by the action of the acid on most metals (i.e. lead, copper, tin, zinc, aluminum, etc.). Concentrated sulfuric acid oxidizes, dehydrates, or sulfonates most organic compounds.

Special Remarks on Corrosivity:

Non-corrosive to lead and mild steel, but dilute acid attacks most metals. Attacks many metals releasing hydrogen. Minor corrosive effect on bronze. No corrosion data on brass or zinc.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 2140 mg/kg [Rat.]. Acute toxicity of the vapor (LC50): 320 mg/m³ 2 hours [Mouse].

Chronic Effects on Humans:

CARCINOGENIC EFFECTS: Classified 1 (Proven for human.) by IARC, + (Proven.) by OSHA. Classified A2 (Suspected for human.) by ACGIH. May cause damage to the following organs: kidneys, lungs, heart, cardiovascular system, upper respiratory tract, eyes, teeth.

Other Toxic Effects on Humans:

Extremely hazardous in case of inhalation (lung corrosive). Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (corrosive), of ingestion, .

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:

Mutagenicity: Cytogenetic Analysis: Hamster, ovary = 4mmol/L Reproductive effects: May cause adverse reproductive effects based on animal data. Developmental abnormalities (musculoskeletal) in rabbits at a dose of 20 mg/m³ for 7 hrs.(RTECS) Teratogenicity: neither embryotoxic, fetotoxic, nor teratogenic in mice or rabbits at inhaled doses producing some maternal toxicity

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: Skin: Causes severe skin irritation and burns. Continued contact can cause tissue necrosis. Eye: Causes severe eye irritation and burns. May cause irreversible eye injury. Ingestion: Harmful if swallowed. May cause permanent damage to the digestive tract. Causes gastrointestinal tract burns. May cause perforation of the stomach, GI bleeding, edema of the glottis, necrosis and scarring, and sudden circulatory collapse(similar to acute inhalation). It may also cause systemic toxicity with acidosis. Inhalation: May cause severe irritation of the respiratory tract and mucous membranes with sore throat, coughing, shortness of breath, and delayed lung edema. Causes chemical burns to the respiratory tract. Inhalation may be fatal as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Cause corrosive action on mucous membranes. May affect cardiovascular system (hypotension, depressed cardiac output, bradycardia). Circulatory collapse with clammy skin, weak and rapid pulse, shallow respiration, and scanty urine may follow. Circulatory shock is often the immediate cause of death. May also affect teeth(changes in teeth and supporting structures - erosion, discoloration). Chronic Potential Health Effects: Inhalation: Prolonged or repeated inhalation may affect behavior (muscle contraction or spasticity), urinary system (kidney damage), and cardiovascular system, heart (ischemic heart leisons), and respiratory system/lungs(pulmonary edema, lung damage), teeth (dental discoloration, erosion). Skin: Prolonged or repeated skin contact may cause dermatitis, an allergic skin reaction.

Section 12: Ecological Information

Ecotoxicity: Ecotoxicity in water (LC50): 49 mg/l 48 hours [bluegill/sunfish].

BOD5 and COD: Not available.

Products of Biodegradation:

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:

Sulfuric acid may be placed in sealed container or absorbed in vermiculite, dry sand, earth, or a similar material. It may also be diluted and neutralized. Be sure to consult with local or regional authorities (waste regulators) prior to any disposal. Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: Class 8: Corrosive material

Identification: : Sulfuric acid UNNA: 1830 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:

Illinois toxic substances disclosure to employee act: Sulfuric acid New York release reporting list: Sulfuric acid Rhode Island RTK hazardous substances: Sulfuric acid Pennsylvania RTK: Sulfuric acid Minnesota: Sulfuric acid Massachusetts RTK: Sulfuric acid New Jersey: Sulfuric acid California Director's List of Hazardous Substances (8 CCR 339): Sulfuric acid Tennessee RTK: Sulfuric acid TSCA 8(b) inventory: Sulfuric acid SARA 302/304/311/312 extremely hazardous substances: Sulfuric acid SARA 313 toxic chemical notification and release reporting: Sulfuric acid CERCLA: Hazardous substances.: Sulfuric acid: 1000 lbs. (453.6 kg)

Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):

CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS E: Corrosive liquid.

DSCL (EEC):

R35- Causes severe burns. S2- Keep out of the reach of children. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S30- Never add water to this product. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 0

Reactivity: 2

Personal Protection:**National Fire Protection Association (U.S.A.):****Health:** 3**Flammability:** 0**Reactivity:** 2**Specific hazard:****Protective Equipment:**

Gloves. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Face shield.

Section 16: Other Information**References:**

-Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987.

Other Special Considerations: Not available.**Created:** 10/09/2005 11:58 PM**Last Updated:** 06/09/2012 12:00 PM

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Material Safety Data Sheet

LUMINOL™ TR (Type I Trace-Inhibited)



1. Product and company identification

Product name	: LUMINOL™ TR (Type I Trace-Inhibited)
Code	: LUMTR
Material uses	: Premium trace-inhibited (Type I) insulating oil for use in electrical transformers, circuit breakers and switches.
Manufacturer	: Petro-Canada Lubricants Inc. 2310 Lakeshore Road West Mississauga, Ontario Canada L5J 1K2
<u>In case of emergency</u>	: Suncor Energy: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).

2. Hazards identification

Physical state	: Viscous liquid.
Odour	: Slight naphthalene like odour.
WHMIS (Canada)	: Not controlled under WHMIS (Canada).
OSHA/HCS status	: While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.
Emergency overview	: No specific hazard.
Routes of entry	: Dermal contact. Eye contact. Inhalation. Ingestion.
<u>Potential acute health effects</u>	
Inhalation	: No known significant effects or critical hazards.
Ingestion	: No known significant effects or critical hazards.
Skin	: Slightly irritating to the skin.
Eyes	: Slightly irritating to the eyes.
<u>Potential chronic health effects</u>	
Chronic effects	: No known significant effects or critical hazards.
Carcinogenicity	: Not listed as carcinogenic by OSHA, NTP or IARC.
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.
Medical conditions aggravated by over-exposure	: Repeated or prolonged contact with spray or mist may produce chronic eye irritation and severe skin irritation. Repeated skin exposure can produce local skin destruction or dermatitis.

See toxicological information (Section 11)

3. Composition/information on ingredients

<u>Name</u>	<u>CAS number</u>	<u>%</u>
Mixture of severely hydrotreated and hydrocracked base oil (petroleum).	Mixture	-

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.

The base oil may be a mixture of the following CAS#s: 8042-47-5, 64742-46-7, 64742-47-8, 64742-53-6, 64742-54-7, 64742-55-8, 72623-84-8, 72623-85-9, 72623-86-0, 72623-87-1, 178603-64-0, 178603-65-1, 178603-66-2, 445411-73-4

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 skin thoroughly with soap and water or use recognised skin cleanser. 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.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
- 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** : May be combustible at high temperature.
- 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.
- Products of combustion** : Carbon oxides (CO, CO₂), nitrogen oxides (NO_x), sulphur oxides (SO_x), hydrocarbons, smoke and irritating vapours as products of incomplete combustion.
- 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.
- Special remarks on fire hazards** : Low fire hazard. This material must be heated before ignition will occur.
- Special remarks on explosion hazards** : Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

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 spilt material. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- 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 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.

6 . Accidental release measures

- 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 (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product. 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. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour 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 unlabelled containers. Use appropriate containment to avoid environmental contamination.

8 . Exposure controls/personal protection

Ingredient	Exposure limits
Mixture of severely hydrotreated and hydrocracked base oil (petroleum).	ACGIH TLV (United States). Notes: (Mineral oil) TWA: 5 mg/m ³ , (Inhalable fraction) 8 hour(s).

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.
- Engineering measures** : No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure 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. 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. Recommended: organic vapour filter
- 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.
Recommended: nitrile, neoprene, polyvinyl alcohol (PVA), Viton®.
- 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.

8 . Exposure controls/personal protection

- 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** : Viscous liquid.
- Flash point** : Open cup: 170°C (338°F) [Cleveland.]
- Auto-ignition temperature** : Not available.
- Flammable limits** : Not available.
- Colour** : Clear and bright
- Odour** : Slight naphthalene like odour.
- Odour threshold** : Not available.
- pH** : Not available.
- Boiling/condensation point** : Not available.
- Melting/freezing point** : Not available.
- Relative density** : 0.84 kg/L @ 15°C (59°F)
- Vapour pressure** : Not available.
- Vapour density** : Not available.
- Volatility** : Not available.
- Evaporation rate** : Not available.
- Viscosity** : 9.4 cSt @ 40°C (104°F), 2.6 cSt @ 100°C (212°F)
- Pour point** : -60°C (-76°F)
- Solubility** : Insoluble in water.

10 . Stability and reactivity

- Chemical stability** : The product is stable.
- Hazardous polymerisation** : Under normal conditions of storage and use, hazardous polymerisation will not occur.
- Materials to avoid** : Reactive with oxidising agents and acids.
- Hazardous decomposition products** : May release COx, NOx, SOx, hydrocarbons, smoke and irritating vapours when heated to decomposition.

11 . Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Mixture of severely hydrotreated and hydrocracked base oil (petroleum).	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	>5000 mg/kg	-
	LC50 Inhalation Dusts and mists	Rat	>5.2 mg/l	4 hours

Conclusion/Summary : Not available.

Chronic toxicity

Conclusion/Summary : Not available.

Irritation/Corrosion

Conclusion/Summary : Not available.

Sensitiser

11 . Toxicological information

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Mixture of severely hydrotreated and hydrocracked base oil (petroleum).	A4	-	-	-	-	-

Mutagenicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

12 . Ecological information

Environmental effects : This product is inherently biodegradable.

Aquatic ecotoxicity

Conclusion/Summary : Not available.

Biodegradability

Conclusion/Summary : 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 minimised wherever possible. 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. 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 spilt material and runoff and contact with soil, waterways, drains and sewers.

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.

14 . Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
TDG Classification	Not regulated.	-	-	-		-
DOT Classification	Not available.	Not available.	Not available.	-		-

PG* : Packing group

15 . Regulatory information

United States

HCS Classification : Not regulated.

Canada

WHMIS (Canada) : Not controlled under WHMIS (Canada).

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

Canada inventory : All components are listed or exempted.

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

Europe inventory : All components are listed or exempted.

16 . Other information

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

Health	1
Flammability	1
Physical hazards	0
Personal protection	B

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



References

: Available upon request.
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Date of printing :

2/8/2012.

Date of issue :

8 February 2012

Date of previous issue :

No previous validation.

Responsible name :

Product Safety - JDW

Indicates information that has changed from previously issued version.

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

Lubricants:

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: (905) 804-4752

Notice to reader

16 . Other information

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.



Material Safety Data Sheet

Preparation Date: 31-Jul-2006

Revision Date: 24-Aug-2009

Revision Number: 1

SECTION 1 – PRODUCT AND COMPANY IDENTIFICATION

Supplier(s):

Orica Canada Inc.
Maple Street
Brownsburg, QC
For MSDS Requests: 1-450-533-4201

Orica USA Inc.
33101 E. Quincy Avenue
Watkins, CO 80137-9406
For MSDS Requests: 1-303-268-5000

Product Name: Fortan™ Advantage, Fortis™ Advantage & Fortis™ Advantage ANE (USA)

Product Code: 2310

Alternate Name(s): Apex™ Clear

UN-No: UN3139

Recommended Use: Can be sensitized to become a booster sensitive emulsion explosive.

Emergency Telephone Number: FOR CHEMICAL EMERGENCIES (24 HOUR) INVOLVING TRANSPORTATION, SPILL, LEAK, RELEASE, FIRE OR ACCIDENTS: **IN CANADA CALL:** THE ORICA TRANSPORTATION EMERGENCY RESPONSE SYSTEM AT 1-877-561-3636. **IN THE U.S. CALL: CHEMTREC 1-800-424-9300. IN THE U.S.:** FOR LOST, STOLEN, OR MISPLACED EXPLOSIVES CALL: BATF 1-800-800-3855. FORM ATF F 5400.0 MUST BE COMPLETED AND LOCAL AUTHORITIES (STATE/MUNICIPAL POLICE, ETC.) MUST BE ADVISED.

SECTION 2 – HAZARD IDENTIFICATION

Emergency Overview:

May cause skin irritation and/or dermatitis. Irritating to eyes. Harmful if swallowed. Oxidizing agent. May cause methemoglobinemia. May cause liver damage. May cause kidney damage.

Appearance:
Opaque, viscous liquid

Physical State:
Viscous, liquid

Odor:
Vinegar

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No	Weight %
Ammonium Nitrate	6484-52-2	60-75
Mineral Oil	64742-53-6	1-6
Diesel Fuel Oil	68476-34-6	1-6

SECTION 4 – FIRST AID MEASURES

General Advice: In case of accident or if you feel unwell, seek medical advice IMMEDIATELY (show the product label where possible).

Eye Contact: Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Immediate medical attention is required.

Skin Contact: Wash off immediately with soap and plenty of water, removing all contaminated clothes and shoes. If skin irritation persists, call a physician.

Inhalation: Move victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Give cardiopulmonary resuscitation (CPR) if there is no breathing AND no pulse. Obtain medical advice IMMEDIATELY.

Ingestion: Immediate medical attention is required. Do not induce vomiting. Clean mouth with water and afterwards drink plenty of water. If spontaneous vomiting occurs, have victim lean forward with head positioned to avoid breathing in of vomitus, rinse mouth and administer more water. Never give anything by mouth to and unconscious person.

Notes to physician: Symptomatic. Administer oxygen if there are signs of cyanosis. If clinical condition deteriorates, administer 10cc Methylene Blue intravenously. It is unlikely for this to be required with methemoglobin level of less than 40%.

SECTION 5 – FIRE-FIGHTING MEASURES

Flammable properties:	Not itself combustible but assists fire in burning materials. The product does not flash. Rate of burning: attempts to smother a fire involving this product will be ineffective as it is its own oxygen source.
Suitable extinguishing media:	Use Water only, in as much volume as possible to cool the burning mass quickly. Chemical extinguishers will not work. Fire-fighters should wear positive pressure self-containing breathing apparatus (SCBA) and full turnout gear. Water may be applied through fixed extinguishing system (sprinklers) as long as people need not be present for the system to operate.
Unsuitable extinguishing media:	Chemical extinguishers will not work. Attempts to smother a fire involving this product will be ineffective as it is its own oxygen source. Smother this product could lead to decomposition and explosion. This product is more sensitive to detonation if contaminated with organic or oxidisable material or if heated while confined. Unless the mass of product on fire is flooded with water, re-ignition is possible.
Specific hazards arising from the chemical:	Toxic gases and vapours will be released by the thermal decomposition of this material. At higher temperatures, decomposition may be explosive, especially if confined. Immediately evacuate all personnel from the area to a safe distance. Guard against re-entry.
Protective equipment and precautions for firefighters:	As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH approved (or equivalent) and full protective gear.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Methods for containment:	Contain or absorb leaking liquid with sand or earth or other suitable substance.
Methods for cleaning up:	Avoid the use of metal tools containing iron and/or copper. Be careful to avoid shock, friction, and contact with grit. Collect product for recovery or disposal. For release to land, contain discharge by constructing dykes or applying inert absorbent; for release to water, utilize damming and/or water diversion to minimize the spread of contamination. Collect contaminated soil and water, and absorbent for proper disposal. Notify applicable government authority if release is reportable or could adversely affect the environment.
Other information:	Deactivating chemicals: Detergents will break up emulsions if mixed in.

SECTION 7 – HANDLING AND STORAGE

Handling:	Avoid contact with eyes or skin. Wash thoroughly with soap and water after handling. Wash clothing before re-use. Locate safety shower and eyewash station closest to chemical handling area. The use of coveralls is recommended. Use good industrial hygiene and housekeeping practices. Keep away from open flames, hot surfaces and sources of ignition
Storage:	Store in a cool, well-ventilated area. Keep away from heat, sparks, and flames. Keep storage containers closed. Store at 10-27°C (50-80°F). Do not expose closed containers to temperatures above 40°C (104°F). Product is mildly corrosive to concrete and steel. Stainless steel and aluminium are adequate. Avoid materials made of copper, iron, or bronze.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Mineral oil	5 mg/m ³	5 mg/ m ³	
Diesel Fuel	TWA: 100 mg/m ³ Skin		

Other exposure guidelines:	Ammonium Nitrate: ORICA Guideline 5 mg/m ³ (internal TWA)
Engineering Measures:	No information available.
Personal Protective Equipment	
Eye/Face Protection:	Tightly fitting safety goggles.
Skin Protection:	User should verify impermeability under normal conditions of use prior to general use. Impervious butyl rubber gloves.
Respiratory Protection:	In case of insufficient ventilation wear suitable respiratory equipment. A NIOSH-approved respirator, if required.
Hygiene Measures:	Handle in accordance with good industrial hygiene and safety practice. Recommendations listed in this section indicate the type of equipment, which will provide protection against over

exposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Opaque, viscous liquid	Odor:	Vinegar
Physical State:	Viscous, liquid	Viscosity:	No information available
pH:	3 - 6	Flash Point:	Not applicable
Autoignition Temperature:	230-265 °C/ 446-509 °F	Boiling Point/Range:	None
Melting Point/Range:	Not available	Flammable Limits (Upper):	Not applicable
Flammable Limits (Lower):	Not applicable	Explosion Power:	No data available
Specific Gravity:	1.20 – 1.35 g/cc	Water Solubility:	Slightly soluble
Other Solubility:	Slightly soluble in standard organic solvents.	Vapor Pressure:	0 mmHg @ 20 °C
Oxidizing Properties:	Oxidizer	Partition Coefficient (n-octanol/water):	No data available

SECTION 10 – STABILITY AND REACTIVITY

Stability:	Stable under normal conditions. Decomposition Temperature: Ammonium Nitrate will spontaneously decompose at 210 °C (410 °F).
Conditions to avoid:	Keep away from open flames, hot surfaces and sources of ignition. Not expected to be sensitive to static discharge. Not expected to be sensitive to mechanical impact.
Incompatible materials:	Avoid oxidizable materials, metal powder, bronze & copper alloys, fuels (e.g. lubricants, machine oils), fluorocarbon lubricants, acids, corrosive liquids, chlorate, sulphur, sodium nitrite, charcoal, coke and other finely divided combustibles. Strong oxidizing and reducing agents.
Hazardous decomposition products:	The following toxic decomposition products may be released. At temperatures above 210 °C (410 °F), decomposition may be explosive, especially if confined. Nitrogen oxides (NOx). Carbon oxide. Hydrocarbons.
Hazardous Polymerization:	None under normal processing. Hazardous polymerization does not occur. Explosive material under shock conditions.

SECTION 11 – TOXICOLOGICAL INFORMATION

Acute Toxicity

Product Information: Irritating to eyes. May cause skin irritation. Harmful if swallowed.

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Ammonium Nitrate	2217 mg/kg Rat	3000 mg/kg Rabbit	88.8 mg/L Rat 4 h
Mineral Oil	4300 mg/kg Rat		
Diesel Fuel	>5000 mg/kg (rabbit)		

Subchronic Toxicity (28 Days): Ammonium Nitrate: Ingestion may cause methemoglobinemia. Initial manifestation of methemoglobinemia is cyanosis, characterized by navy lips, tongue and mucous membranes, with skin color being slate grey. Further manifestation is characterized by headache, weakness, dyspnea, dizziness, stupor, respiratory distress and death due to anoxia. If ingested, nitrates may be reduced to nitrites by bacteria in the digestive tract. Signs and symptoms of nitrite poisoning include methemoglobinemia, nausea, dizziness, increased heart rate, hypotension, fainting and, possibly shock.

Chronic Toxicity: May cause methemoglobinemia.
Carcinogenicity: The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical name	ACGIH	IARC	NTP	OSHA
Diesel Fuel	A3			

Legend: A3: Confirmed as an animal carcinogen.
Mutagenic effects: There is no evidence of mutagenic potential.

Irritation: Irritating to eyes. May cause irritation of respiratory tract. May cause skin irritation in susceptible persons.

Reproductive effects: No information is available and no adverse reproductive effects are anticipated.

Developmental effects: No information is available and no adverse developmental effects are anticipated.

Target Organ: Eyes, skin, respiratory system, blood, liver, urinary tract, gastrointestinal tract (GI), endocrine system, & immune system.

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity effects: Dissolves slowly in water. Harmful to aquatic life at low concentrations.
Environmental Effects: Can be dangerous if allowed to enter drinking water intakes. Do not contaminate domestic or irrigation water supplies, lakes, streams, ponds, or rivers.

Persistence/Degradability: Some water resistance but soluble with extended time periods.

Mobility in Environmental media: Dissolves slowly in water.

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste Disposal Method: Burn under supervision of an expert at an explosive burning ground or destroy by detonation in boreholes, in accordance with applicable local, provincial and federal regulations. Call upon the services of an Orica Technical Representative.

SECTION 14 – TRANSPORT INFORMATION

DOT Proper Shipping Name: Oxidizing substance, liquid, N.O.S. (Ammonium Nitrate)
Hazard Class: 5.1
UN-No: UN3139
Packing group: II

Transportation Emergency Telephone Number: 1-877-561-3636 or CHEMTREC: 1-800-424-9300

SECTION 15 – REGULATORY INFORMATION

USA CLASSIFICATION:

SARA Regulations Sections 313 and 40 CFR 372: This product contains the following toxic chemical(s) subject to reporting requirements, Ammonium Nitrate (6484-52-2).

SARA 311/312 Hazardous Categorization

Acute Health Hazard: Yes
Chronic Health Hazard: Yes
Fire Hazard: Yes
Reactive Hazard: No
Sudden Release of Pressure Hazard: Yes

Ozone Protection and 40 CFR 42: No reportable quantities of ozone depleting agents

Other Regulations/Legislations which apply to this product: New Jersey Right-to-Know, Pennsylvania Right-to-Know, Massachusetts Right-to-Know, Rhode Island Right-to-Know, Florida, New Jersey Special Health Hazard Substance List, Minnesota Hazardous Substance List, California Director's List of Hazardous Substances, California Proposition 65.

TSCA: Complies **DSL:** Complies **NDSL:** Complies

The components in the product are on the following international inventory lists:

Chemical Name	TSCA	DSL	NDSL	ENCS	EINECS	ELINCS	CHINA	KECL	PICCS	AICS
Ammonium Nitrate	X	X	-	X	X	-	X	X	X	X
Mineral Oil	X	X	-	-	X	-	X	X	X	X
Diesel Fuel	X	X	-	-	X	-	X	X	X	X

Legend: X – Listed

SECTION 16 – OTHER INFORMATION

Prepared by: Safety Health & Environment
303-268-5000

Preparation Date: 31-Jul-2006
Revision Date: 24-Aug-2009

The information contained herein is offered only as guide to the handling of this specific material and has been prepared in good faith by technically knowledgeable personnel. It is not intended to be all-inclusive and the manner and conditions of use and handling may involve other and additional considerations. No warranty of any kind is given or implied and Orica will not be liable for any damages, losses, injuries or consequential damages which may result from the use of or reliance on any information contained herein.

End of MSDS



Safety Data Sheet

The Armor All/STP Products Company

44 Old Ridgebury Road
Suite 300
Danbury, CT 06810
Tel. 1-203-205-2900

1. Product And Company Identification

Product Name: ARMOR ALL® Original Protectant

Responsible Party: The Armor All/STP Products Company
44 Old Ridgebury Road
Suite 300
Danbury, CT 06810

Information Phone Number: +1 203-205-2900

Emergency Phone Number:

For Medical Emergencies, call 1-866-949-6465 / +1 303-389-1332 (Outside US and Canada)
For Transportation Emergencies, call 1-800-424-9300 (Chemtrec) +1-703-527-3887 for
Outside US and Canada (call collect)

SDS Date Of Preparation: 01/31/2015

Product Use and Uses Advised Against: Automotive maintenance product – For consumer and professional use

2. Hazards Identification

Note: This product is a consumer product and is labeled in accordance with the Consumer Product Safety Commission regulations and not OSHA regulations. The requirements for the labeling of consumer products take precedence over OSHA labeling so the actual product label will differ from the OSHA information shown below.

GHS Classification:

Physical:	Health:
Not Hazardous	Not Hazardous

GHS Label Elements: None

Hazards not otherwise specified: None

Percentage of unknown toxicity: N/a

3. Composition/Information On Ingredients

Component	CAS No.	Amount
Non-Hazardous Ingredients	Mixture	95> - 100%
Mineral Oil	8042-47-5	< 5%

The specific identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

4. First Aid Measures

Inhalation: If symptoms of exposure develop, remove to fresh air. Seek medical attention if symptoms persist.

Skin Contact: Rinse skin with plenty of water. If skin irritation or redness develops, seek medical attention.

Eye Contact: Flush eyes with plenty of water. If irritation or other symptoms persist, seek medical attention.



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The Armor All/STP Products Company

44 Old Ridgebury Road
Suite 300
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Ingestion: Do not induce vomiting unless directed to by doctor or physician. If the victim is fully conscious, have them drink a glass of water. Get medical assistance by calling a doctor or poison center. Never give anything by mouth to a person who is unconscious or drowsy.

Most Important Symptoms: Direct eye contact may cause mild irritation.

Indication of Immediate Medical Attention/Special Treatment: Immediate medical attention should not be required.

5. Firefighting Measures

Suitable (and Unsuitable) Extinguishing Media: Use dry chemical, carbon dioxide, foam, or water spray.

Specific Hazards Arising from the Chemical: Closed containers may rupture if exposed to extreme heat. Thermal decomposition will generate oxides of carbon and silicon and formaldehyde.

Special Protective Equipment and Precautions for Fire-fighters: Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing for fires in areas where chemicals are used or stored.

6: Accidental Release Measures

Personal Precautions, Protective Equipment, and Emergency Procedures: Wear appropriate protective equipment.

Environmental Precautions: Prevent entry in storm sewers and waterways. Report spill as required by local and national regulations.

Methods for Containment and Clean-Up: Absorb with an inert material. Collect into a suitable container for disposal. Rinse area with water.

7. Handling and Storage

Precautions for Safe Handling: Avoid contact with eyes. Avoid prolonged contact with skin and clothing. Wash hands after use. Keep out of the reach of children.

Conditions for Safe Storage, Including any Incompatibilities: No special storage required.

8. Exposure Controls / Personal Protection

Exposure Guidelines:

CHEMICAL	EXPOSURE LIMIT
Non-Hazardous Ingredients	None Established
Mineral Oil	5.0 mg/m ³ inhalable TWA ACGIH TLV 5.0 mg/m ³ TWA OSHA PEL

Engineering Controls: General ventilation should be adequate for all normal use.

Personal Protective Equipment



Safety Data Sheet

The Armor All/STP Products Company

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Respiratory Protection: None required under normal use conditions.

Gloves: None required under normal use conditions.

Eye Protection: None required for normal use. Avoid eye contact.

Other Protective Equipment/Clothing: None required under normal use conditions.

9. Physical and Chemical Properties

Appearance and Odor: Opaque, white viscous liquid with a slight odor.

Physical State: Liquid	Odor Threshold: Not available
pH: 7.5 - 9.0	Specific Gravity: ~1
Initial Boiling Point/Range: Not determined	Vapor Pressure: Not determined
Melting/Freezing Point: Not determined	Vapor Density: Not determined
Solubility In Water: Easily soluble	Percent Volatile: >80%
Viscosity: ~ 3,000 cP	Evaporation Rate: Not determined
Coefficient Of Water/Oil Distribution: Not determined	VOC Content: Not determined
Flash Point: >212°F (>100°C)	Autoignition Temp: Not determined
Decomposition Temperature: Not determined	Flammability Limits: LEL: Not determined UEL: Not determined
Flammability (solid, gas): Not applicable	

10. Stability and Reactivity

Reactivity: Not normally reactive

Chemical Stability: Stable.

Possibility of Hazardous Reactions: None known

Conditions To Avoid: None known

Incompatible Materials: Strong oxidizing agents.

Hazardous Decomposition Products: Thermal decomposition will generate oxides of carbon, silicon dioxide, and formaldehyde.

11. Toxicological Information

POTENTIAL HEALTH EFFECTS:

Acute Hazards:

Inhalation: No adverse effects expected from the normal use of this product.

Skin Contact: No adverse effects expected from the normal use of this product.

Eye Contact: Direct contact may cause slight eye irritation.

Ingestion: Swallowing may cause gastrointestinal disturbances.



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The Armor All/STP Products Company

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Chronic Hazards: None currently known.

Carcinogenicity Listing: None of the components is listed as a carcinogen or potential carcinogen by IARC, NTP, ACGIH or OSHA.

Acute Toxicity Values:

No data available for product.

Mineral Oil: LD50 Rat oral > 5,000 mg/kg
LD50 Rabbit dermal > 2,000 mg/kg
LC50 Rat inhalation > 5,000 mg/L/4 hr.

12. Ecological Information

Ecotoxicity:

No ecotoxicity data is currently available for product.

Mineral Oil: NOEL Oncorhynchus mykiss \geq 100 mg/L/96 hr.
NOEL Daphnia magna \geq 100 mg/L/96 hr.

Persistence and Degradability: No data available

Bio accumulative Potential: No data available

Mobility in Soil: No data available

Other Adverse Effects: No data available

13. Disposal Considerations

Dispose of in accordance with all local, state/provincial and federal regulations. Offer empty containers for recycling.

14. Transport Information

DOT Hazardous Materials Description: Not Regulated

Canadian TDG Hazardous Materials Description: Not Regulated

IMDG Dangerous Goods Description: Not Regulated

15. Regulatory Information

United States:

EPA TSCA INVENTORY: All of the components of this material are listed on the Toxic Substances Control Act (TSCA) Chemical Substances Inventory.



Safety Data Sheet

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CERCLA Section 103: This product has no RQ, however, oil spills must be reported to the National Response Center. Many states have more stringent release reporting requirements. Report spills required under federal, state and local regulations.

SARA Hazard Category (311/312): Not hazardous

SARA 313: This product contains the following chemicals subject to Annual Release Reporting Requirements Under SARA Title III, Section 313 (40 CFR 372): None

Canada:

Canadian WHMIS Classification: Not a controlled product.

Canadian Environmental Protection Act: All of the ingredients are listed on the Canadian DSL.

This SDS has been prepared according to the criteria of the Controlled Products Regulation (CPR) and the SDS contains all of the information required by the CPR.

16. Other Information

NFPA Rating (NFPA 704):	Health: 0	Fire: 0	Instability: 0
HMIS Rating:	Health: 0	Fire: 0	Physical Hazard: 0

REVISION SUMMARY: January 31, 2015 Update to GHS SDS format and name change: Changes to all sections.

DATA SUPPLIED IS FOR USE ONLY IN CONNECTION WITH OCCUPATIONAL SAFETY AND HEALTH

SAFETY DATA SHEET

PETRO-CANADA ATF D3M



000003001076

Version 5.1

Revision Date 2017/01/27

Print Date 2017/02/03

SECTION 1. IDENTIFICATION

Product name : PETRO-CANADA ATF D3M

Synonyms : RDL 2746

Product code : ATFD3MP5R, ATFD3MP20, ATFD3MICT, ATFD3MIBC, ATFD3MDRR, ATFD3MDRM, ATFD3MDCT, ATFD3MC12, ATFD3M, ATFD3MBLK

Manufacturer or supplier's details
Petro-Canada Lubricants Inc.
2310 Lakeshore Road West
Mississauga ON L5J 1K2
Canada

Emergency telephone number
Petro-Canada Lubricants Inc.: +1 905-403-5770;
CHEMTREC Transport Emergency: 1-800-424-9300;
Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : Automatic transmission fluid for most North American automobiles and for off-highway torque converters requiring C-4 type transmission fluid. It is also suitable as a hydraulic fluid and as a top-up in power steering systems. Not to be used in conditions where aerosols could be generated.

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

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	viscous liquid
Colour	dark red
Odour	Mild petroleum oil like.

GHS Classification

Not a hazardous substance or mixture.

GHS label elements

Not a hazardous substance or mixture.

Potential Health Effects

Primary Routes of Entry : Eye contact
Ingestion

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Print Date 2017/02/03

Inhalation
Skin contact

Aggravated Medical Condition : None known.

Other hazards

None known.

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 carcinogen by ACGIH.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based	72623-87-1	30 - 50 %
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	40 - 60 %
Methacrylate copolymers		1 - 3 %

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.

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PETRO-CANADA ATF D3M



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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 fire-fighting : Cool closed containers exposed to fire with water spray.
- Hazardous combustion products : Carbon oxides (CO, CO₂), nitrogen oxides (NO_x), sulphur oxides (SO_x), phosphorus oxides (PO_x), hydrocarbons, 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.

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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

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based	72623-87-1	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 (Inhalable fraction)	5 mg/m ³	ACGIH
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 (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.

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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.
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	: dark red
Odour	: Mild petroleum oil like.
Odour Threshold	: No data available
pH	: No data available
Pour point	: -51 °C (-60 °F)
Boiling point/boiling range	: No data available
Flash point	: 185 °C (365 °F) Method: Cleveland open cup
Fire Point	: 205 °C (401 °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

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Vapour pressure	:	No data available
Relative vapour density	:	No data available
Density	:	0.855 kg/l (15 °C / 59 °F)
Solubility(ies)		
Water solubility	:	insoluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity		
Viscosity, kinematic	:	34.26 cSt (40 °C / 104 °F)
		7.7 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, reducing agents and acids.
Hazardous decomposition products	:	May release CO _x , 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	:	Assessment: The substance or mixture has no acute dermal toxicity

SAFETY DATA SHEET

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000003001076

Version 5.1

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Components:

lubricating oils (petroleum), C20-50, 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,

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

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

SAFETY DATA SHEET

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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.
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 Regulations

IATA-DGR

Not regulated as a dangerous good

IMDG-Code

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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.

National Regulations

TDG

Not regulated as a dangerous good

SECTION 15. REGULATORY INFORMATION

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 SDS : Internet: lubricants.petro-canada.com/sds
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

Revision Date : 2017/01/27

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.

Brake Fluid DOT 3

SECTION 1. IDENTIFICATION

Product Identifier	Brake Fluid DOT 3
Other Means of Identification	15-810, 15-811, 15-813, 15-814, 15-818, 35-810AS, 35-810CQ, 35-810PC, 35-810PRES, 35-811AS, 35-811CQ, 35-811PRES, 35-811SO, 35-811WM, 35-813AS, 35-813CQ, 35-813SO, 35-813WM, 35-814AS, 35-814CQ, 35-814PRES, 35-814SO, 35-816C, 35-818AS, 35-818CQ, 85-818
Recommended Use	Please refer to Product label.
Restrictions on Use	None known.
Manufacturer / Supplier	Recochem Inc., 850 Montee de Liesse, Montreal, QC, H4T 1P4, Compliance and Regulatory Department, 905-878-5544, www.recochem.com
Emergency Phone No.	CANUTEC, 613-996-6666, 24 Hours
SDS No.	1515
Date of Preparation	August 11, 2015

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Acute toxicity (Oral) - Category 4; Acute toxicity (Dermal) - Category 4; Serious eye damage/eye irritation - Category 2A; Reproductive Toxicity - Category 2

GHS Label Elements



Signal Word:
Warning

Hazard Statement(s):

H302 Harmful if swallowed.
H312 Harmful in contact with skin.
H319 Causes serious eye irritation.
H361 Suspected of damaging fertility or the unborn child if inhaled, following skin contact and/or if swallowed.

Precautionary Statement(s):

Prevention:

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P264 Wash hands and skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/protective clothing.

Product Identifier: Brake Fluid DOT 3
SDS No.: 1515
Date of Preparation: August 11, 2015

Response:

- P301 + P312 IF SWALLOWED: Call a POISON CENTRE/doctor if you feel unwell.
P330 Rinse mouth.
P302 + P352 IF ON SKIN: Wash with plenty of water.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice/attention.
P312 Call a POISON CENTRE/doctor if you feel unwell.
P321 Specific treatment (see supplemental first aid instruction on this label).
P337 + P313 If eye irritation persists: Get medical advice/attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.

Storage:

Store in a well ventilated place. Keep cool. Keep container tightly closed. Store locked up.

Disposal:

Dispose of contents/container in accordance with applicable regional, national and local laws and regulations.

Note:

3-7
% of the mixture consists of ingredient(s) of unknown acute toxicity.

Other Hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture:

Chemical Name	CAS No.	%	Other Identifiers
Diethylene glycol	111-46-6	10-30	
Poly(oxy-1,2-ethanediyl), alpha-butyl- omega-hydroxy-	9004-77-7	10-30	
3,6,9,12-Tetraoxahexadecan-1-ol	1559-34-8	7-13	
Diethylene glycol monobutyl ether	112-34-5	7-13	
Poly(oxy-1,2-ethanediyl), alpha-methyl-omega-hydroxy-	9004-74-4	3-7	
Diethylene glycol monoethyl ether	111-90-0	1-5	
Diethylene glycol monomethyl ether	111-77-3	1-5	

Notes

The specific chemical identity and/or exact percentage of composition (concentration) has been withheld as a trade secret.

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Inhalation

Remove source of exposure or move to fresh air. Get medical advice/attention if you feel unwell or are concerned.

Skin Contact

Avoid direct contact. Wear chemical protective clothing if necessary. Take off contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Rinse with lukewarm, gently flowing water for 5 minutes.

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Eye Contact

Quickly and gently blot or brush chemical off the face. Immediately rinse the contaminated eye(s) with lukewarm, gently flowing water for 15-20 minutes, while holding the eyelid(s) open. Remove contact lenses, if present and easy to do. Take care not to rinse contaminated water into the unaffected eye or onto the face. If eye irritation persists, get medical advice/attention.

Ingestion

Rinse mouth with water. Get medical advice/attention if you feel unwell or are concerned.

Most Important Symptoms and Effects, Acute and Delayed

No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Immediate Medical Attention and Special Treatment

Special Instructions

No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Not combustible. Use extinguishing agent suitable for surrounding fire.

Unsuitable Extinguishing Media

None known.

Specific Hazards Arising from the Chemical

Does not burn.

In a fire, the following hazardous materials may be generated: toxic chemicals.

Special Protective Equipment and Precautions for Fire-fighters

Review Section 6 (Accidental Release Measures) for important information on responding to leaks/spills.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

No special precautions are necessary. Use the personal protective equipment recommended in Section 8 of this safety data sheet.

Environmental Precautions

It is good practice to prevent releases into the environment. Do not allow into any sewer, on the ground or into any waterway.

Methods and Materials for Containment and Cleaning Up

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). Use spark-proof tools and explosion-proof equipment. 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.

Other Information

Report spills to local health, safety and environmental authorities, as required.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling

Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in

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areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Conditions for Safe Storage

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. Eliminate all ignition sources. 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 unlabeled containers. Use appropriate containment to avoid environmental contamination.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Chemical Name	ACGIH TLV®		OSHA PEL		AIHA WEEL	
	TWA	STEL	TWA	Ceiling	8-hr TWA	TWA
Diethylene glycol					10 mg/m3	
Diethylene glycol monobutyl ether	10 ppm					
Diethylene glycol monoethyl ether					25 ppm	

Appropriate Engineering Controls

General ventilation is usually adequate.

Individual Protection Measures

Eye/Face Protection

Not required but it is good practice to wear safety glasses or chemical safety goggles.

Skin Protection

Not required, if used as directed.

Respiratory Protection

Not normally required if product is used as directed.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	Light amber. Particle Size: Not applicable
Odour	Not available
Odour Threshold	Not available
pH	Not applicable
Melting Point/Freezing Point	Not available (melting); Not available (freezing)
Initial Boiling Point/Range	Not available
Flash Point	132 °C (270 °F) (closed cup)
Evaporation Rate	Not available
Flammability (solid, gas)	Not applicable
Upper/Lower Flammability or Explosive Limit	Not available (upper); Not available (lower)
Vapour Pressure	< 0.013 kPa (0.098 mm Hg)
Vapour Density (air = 1)	Not available

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Relative Density (water = 1)	1.038 - 1.040
Solubility	Practically insoluble in water
Partition Coefficient, n-Octanol/Water (Log Kow)	Not available
Auto-ignition Temperature	Not available
Decomposition Temperature	Not available
Viscosity	Not available (kinematic); Not available (dynamic)
Other Information	
Physical State	Liquid
Molecular Formula	Not available
Molecular Weight	Not available
Surface Tension	Not available
Critical Temperature	Not available
Electrical Conductivity	Not available
Vapour Pressure at 50 deg C	Not available
Saturated Vapour Concentration	Not available

SECTION 10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions of use.

Chemical Stability

Normally stable.

Possibility of Hazardous Reactions

None expected under normal conditions of storage and use.

Conditions to Avoid

Water, moisture or humidity.

Incompatible Materials

Slightly reactive or incompatible with the following materials: oxidizing agents (e.g. peroxides).

Hazardous Decomposition Products

Very toxic carbon monoxide, carbon dioxide.

SECTION 11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

Skin contact; eye contact.

Acute Toxicity

Chemical Name	LC50	LD50 (oral)	LD50 (dermal)
Diethylene glycol	4600 mg/m ³ (rat) (30-minute exposure)	12565 mg/kg (rat)	11890 mg/kg (rabbit)
3,6,9, 12-Tetraoxahexadecan-1-ol	Not available	5300 mg/kg (rat)	
Diethylene glycol monobutyl ether		6560 mg/kg (rat)	2764 mg/kg (rabbit)
Poly(oxy-1,2-ethanediyl), alpha-methyl-omega-hydroxy -		39800 mg/kg (rat)	> 20000 mg/kg (rabbit)

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Diethylene glycol monoethyl ether	5240 mg/m3 (rat)	10502 mg/kg (rat)	9143 mg/kg (rabbit)
Diethylene glycol monomethyl ether	> 50000 mg/m3 (rat) (4-hour exposure)	6830 mg/kg (rat)	9404 mg/kg (rabbit)
Poly(oxy-1,2-ethanediyl), alpha-butyl- omega -hydroxy-	Not available	Not available	Not available

LC50: Not applicable.

LD50 (oral): Not applicable.

LD50 (dermal): Not applicable.

Skin Corrosion/Irritation

May cause mild irritation based on information for closely related chemicals.

Serious Eye Damage/Irritation

Causes serious eye damage based on skin corrosion information.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

No information was located.

Skin Absorption

No information was located.

Ingestion

May be harmful based on information for closely related materials. May cause depression of the central nervous system.

Aspiration Hazard

Not known to be an aspiration hazard.

STOT (Specific Target Organ Toxicity) - Repeated Exposure

No information was located.

Respiratory and/or Skin Sensitization

Not a respiratory sensitizer.

Carcinogenicity

Chemical Name	IARC	ACGIH®	NTP	OSHA
Diethylene glycol	Not Listed	Not designated	Not Listed	Not Listed
3,6,9,12-Tetraoxahexadecan-1-ol	Not Listed	Not designated	Not Listed	Not Listed
Diethylene glycol monobutyl ether	Not Listed	Not designated	Not Listed	Not Listed
Poly(oxy-1,2-ethanediyl), alpha-methyl-omega-hydroxy-	Not Listed	Not designated	Not Listed	Not Listed
Diethylene glycol monoethyl ether	Not Listed	Not designated	Not Listed	Not Listed
Diethylene glycol monomethyl ether	Not Listed	Not designated	Not Listed	Not Listed
Poly(oxy-1,2-ethanediyl), alpha-butyl- omega -hydroxy-	Not Listed	Not designated	Not Listed	Not Listed

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Reproductive Toxicity

Development of Offspring

Not known to harm the unborn child.

Sexual Function and Fertility

May cause effects on sexual function and/or fertility based on limited evidence.

Effects on or via Lactation

Not known to cause effects on or via lactation.

Germ Cell Mutagenicity

No information was located.

Interactive Effects

No information was located.

SECTION 12. ECOLOGICAL INFORMATION

Toxicity

Acute Aquatic Toxicity

Chemical Name	LC50 Fish	EC50 Crustacea	ErC50 Aquatic Plants	ErC50 Algae
Diethylene glycol	75200 mg/L (Pimephales promelas (fathead minnow); 96-hour; fresh water)	10000 mg/L (Daphnia magna (water flea); 48-hour)		Not available
3,6,9, 12-Tetraoxahexadecan-1-ol	2400 mg/L (Pimephales promelas (fathead minnow); 96-hour)	2210 mg/L (Daphnia magna (water flea); 48-hour)		
Diethylene glycol monobutyl ether	1300 mg/L (Lepomis macrochirus (bluegill); 96-hour)	100 mg/L (Daphnia magna (water flea); 48-hour)		
Poly(oxy-1,2-ethanediyl), alpha-methyl-omega-hydroxy-	10000 mg/L (Pimephales promelas (fathead minnow); 96-hour)	Not available		
Diethylene glycol monoethyl ether	9650 mg/L (Pimephales promelas (fathead minnow); 96-hour)			
Diethylene glycol monomethyl ether	5741 mg/L (Pimephales promelas (fathead minnow); 96-hour)	1191 mg/L (Daphnia magna (water flea); 48-hour)		
Poly(oxy-1,2-ethanediyl), alpha-butyl- omega-hydroxy-	Not available			

Chronic Aquatic Toxicity

Chemical Name	NOEC Fish	EC50 Fish	NOEC Crustacea	EC50 Crustacea
Diethylene glycol	Not available		Not available	Not available
3,6,9, 12-Tetraoxahexadecan-1-	Not available		Not available	

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ol				
Diethylene glycol monobutyl ether	Not available		Not available	
Poly(oxy-1,2-ethanediyl), alpha-methyl-omega-hydroxy-	Not available		Not available	
Diethylene glycol monoethyl ether	Not available		Not available	
Diethylene glycol monomethyl ether	Not available		Not available	
Poly(oxy-1,2-ethanediyl), alpha-butyl- omega-hydroxy-	Not available		Not available	

Persistence and Degradability

No information was located.

Bioaccumulative Potential

No information was located.

Mobility in Soil

No information was located.

Other Adverse Effects

There is no information available.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

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

Not regulated under Canadian TDG Regulations. Not regulated under US DOT Regulations.

Environmental Hazards Potential Marine Pollutant

Special Precautions for User Not applicable

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code
Not applicable

SECTION 15. REGULATORY INFORMATION

SECTION 16. OTHER INFORMATION

SDS Prepared By Compliance and Regulatory Department
Phone No. 905-878-5544

Additional Information We are committed to uphold the Industry Consumer Ingredient Communication Voluntary Initiative.
Please send us your request by visiting our website at www.recochem.com.

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Ingredients present (intentionally added ingredients) at a concentration of greater than one percent (1%) shall be listed in descending order of predominance. Ingredients present at a concentration of not more than one percent shall be listed but may be disclosed without respect to order of predominance.

Disclaimer

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.

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SAFETY DATA SHEET

1. Identification

Product identifier	Brakleen® Brake Parts Cleaner - Non-Chlorinated
Other means of identification	
Product code	05088
Recommended use	Brake parts cleaner
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Manufactured or sold by:	
Company name	CRC Industries, Inc.
Address	885 Louis Dr. Warminster, PA 18974 US
Telephone	
General Information	215-674-4300
Technical Assistance	800-521-3168
Customer Service	800-272-4620
24-Hour Emergency (CHEMTREC)	800-424-9300 (US) 703-527-3887 (International)
Website	www.crcindustries.com

2. Hazard(s) identification

Physical hazards	Flammable aerosols	Category 1
	Gases under pressure	Compressed gas
Health hazards	Acute toxicity, oral	Category 3
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2A
	Reproductive toxicity	Category 2
	Specific target organ toxicity, single exposure	Category 1
	Specific target organ toxicity, single exposure	Category 3 narcotic effects
	Specific target organ toxicity, repeated exposure	Category 2
	Aspiration hazard	Category 1
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 2
	Hazardous to the aquatic environment, long-term hazard	Category 2
OSHA defined hazards	Not classified.	

Label elements



Signal word

Danger

Hazard statement

Extremely flammable aerosol. Contains gas under pressure; may explode if heated. Toxic if swallowed. May be fatal if swallowed and enters airways. Causes skin irritation. Causes serious eye irritation. May cause drowsiness or dizziness. May cause damage to organs (liver, kidneys, lungs, brain) through prolonged or repeated exposure. Suspected of damaging the unborn child. Causes damage to organs (eyes) by ingestion. Toxic to aquatic life. Toxic to aquatic life with long lasting effects.

Precautionary statement

Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not spray on an open flame or other ignition source. Do not apply while equipment is energized. Pressurized container: Do not pierce or burn, even after use. Extinguish all flames, pilot lights and heaters. Vapors will accumulate readily and may ignite. Do not breathe gas. Use only with adequate ventilation; maintain ventilation during use and until all vapors are gone. Open doors and windows or use other means to ensure a fresh air supply during use and while product is drying. If you experience any symptoms listed on this label, increase ventilation or leave the area. Do not breathe mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear protective gloves/protective clothing/eye protection/face protection. Avoid release to the environment.

Response

If swallowed: Immediately call a poison center/doctor. Rinse mouth. Do NOT induce vomiting. If on skin: Wash with plenty of water. If skin irritation occurs: Get medical attention. Take off contaminated clothing and wash before reuse. 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 do. Continue rinsing. If eye irritation persists: Get medical attention. If exposed: Call a poison center/doctor. If exposed or concerned: Get medical attention. Collect spillage.

Storage

Store in a well-ventilated place. Store locked up. Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F. Exposure to high temperature may cause can to burst.

Disposal

Dispose of contents/container in accordance with local/regional/national regulations.

Hazard(s) not otherwise classified (HNOC)

Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion.

Supplemental information

16.8% of the mixture consists of component(s) of unknown acute oral toxicity. 66.2% of the mixture consists of component(s) of unknown acute hazards to the aquatic environment. 62% of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment.

When exposed to extreme heat or hot surfaces, vapors may decompose to harmful or fatal corrosive gases such as formaldehyde.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Methanol		67-56-1	40 - 50
Toluene		108-88-3	10 - 20
Acetone		67-64-1	5 - 15
3-Methylhexane		589-34-4	5 - 10
Carbon dioxide		124-38-9	5 - 10
n-Heptane		142-82-5	5 - 10
Methylcyclohexane		108-87-2	3 - 5
Naphtha (petroleum), hydrotreated light		64742-49-0	3 - 5
Cyclohexane		110-82-7	1 - 3
Ethylbenzene		100-41-4	< 0.2

Specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation

Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin contact

Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists.

Ingestion

Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. 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.

Most important symptoms/effects, acute and delayed	May cause drowsiness and dizziness. Headache. Nausea, vomiting. Irritation of nose and throat. Aspiration may cause pulmonary edema and pneumonitis. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Upper respiratory tract irritation. Skin irritation. May cause redness and pain. Prolonged exposure may cause chronic effects.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
General information	IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media	Alcohol resistant foam. Water fog. Carbon dioxide (CO ₂). Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	Contents under pressure. Pressurized container may rupture when exposed to heat or flame. This product is a poor conductor of electricity and can become electrostatically charged. If sufficient charge is accumulated, ignition of flammable mixtures can occur. Static electricity accumulation may be significantly increased by the presence of small quantities of water or other contaminants. Material will float and may ignite on surface of water. During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.
Fire-fighting equipment/instructions	In case of fire: Stop leak if safe to do so. Move containers from fire area if you can do so without risk. Containers should be cooled with water to prevent vapor pressure build up.
General fire hazards	Extremely flammable aerosol. Contents under pressure. Pressurized container may rupture when exposed to heat or flame.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Remove all possible sources of ignition in the surrounding area. Many vapors are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks). Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not breathe gas. Emergency personnel need self-contained breathing equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Use appropriate containment to avoid environmental contamination. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. This product is miscible in water. Stop the flow of material, if this is without risk. Prevent product from entering drains. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground. Inform appropriate managerial or supervisory personnel of all environmental releases. Use appropriate containment to avoid environmental contamination.

7. Handling and storage

Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Minimize fire risks from flammable and combustible materials (including combustible dust and static accumulating liquids) or dangerous reactions with incompatible materials. 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. Use caution around energized equipment. The metal container will conduct electricity if it contacts a live source. This may result in injury to the user from electrical shock and/or flash fire. Do not breathe mist or vapor. Do not breathe gas. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Do not taste or swallow. When using, do not eat, drink or smoke. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Use only in well-ventilated areas. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices. Avoid release to the environment. For product usage instructions, please see the product label.

Conditions for safe storage, including any incompatibilities

Level 3 Aerosol.

Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50°C/122 °F. 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. Avoid spark promoters. These alone may be insufficient to remove static electricity. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Acetone (CAS 67-64-1)	PEL	2400 mg/m3 1000 ppm
Carbon dioxide (CAS 124-38-9)	PEL	9000 mg/m3 5000 ppm
Cyclohexane (CAS 110-82-7)	PEL	1050 mg/m3 300 ppm
Ethylbenzene (CAS 100-41-4)	PEL	435 mg/m3 100 ppm
Methanol (CAS 67-56-1)	PEL	260 mg/m3 200 ppm
Methylcyclohexane (CAS 108-87-2)	PEL	2000 mg/m3 500 ppm
n-Heptane (CAS 142-82-5)	PEL	2000 mg/m3 500 ppm

US. OSHA Table Z-2 (29 CFR 1910.1000)

Components	Type	Value
Toluene (CAS 108-88-3)	Ceiling	300 ppm
	TWA	200 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
3-Methylhexane (CAS 589-34-4)	STEL	500 ppm
	TWA	400 ppm
Acetone (CAS 67-64-1)	STEL	500 ppm
	TWA	250 ppm
Carbon dioxide (CAS 124-38-9)	STEL	30000 ppm
	TWA	5000 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
Cyclohexane (CAS 110-82-7)	TWA	100 ppm
Ethylbenzene (CAS 100-41-4)	TWA	20 ppm
Methanol (CAS 67-56-1)	STEL	250 ppm
	TWA	200 ppm
Methylcyclohexane (CAS 108-87-2)	STEL	500 ppm
	TWA	400 ppm
n-Heptane (CAS 142-82-5)	STEL	500 ppm
	TWA	400 ppm
Toluene (CAS 108-88-3)	TWA	20 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Acetone (CAS 67-64-1)	TWA	590 mg/m3 250 ppm
	STEL	54000 mg/m3
Carbon dioxide (CAS 124-38-9)	TWA	30000 ppm 9000 mg/m3 5000 ppm
	TWA	1050 mg/m3
	STEL	300 ppm
Ethylbenzene (CAS 100-41-4)	STEL	545 mg/m3
	TWA	125 ppm 435 mg/m3 100 ppm
Methanol (CAS 67-56-1)	STEL	325 mg/m3 250 ppm
	TWA	260 mg/m3 200 ppm
	TWA	1600 mg/m3
Methylcyclohexane (CAS 108-87-2)	TWA	400 ppm
	Ceiling	1800 mg/m3 440 ppm
	TWA	350 mg/m3 85 ppm
Toluene (CAS 108-88-3)	STEL	560 mg/m3 150 ppm
	TWA	375 mg/m3 100 ppm

Biological limit values**ACGIH Biological Exposure Indices**

Components	Value	Determinant	Specimen	Sampling Time
Acetone (CAS 67-64-1)	25 mg/l	Acetone	Urine	*
Ethylbenzene (CAS 100-41-4)	0.15 g/g	Sum of mandelic acid and phenylglyoxylic acid	Creatinine in urine	*
Methanol (CAS 67-56-1)	15 mg/l	Methanol	Urine	*
Toluene (CAS 108-88-3)	0.3 mg/g	o-Cresol, with hydrolysis	Creatinine in urine	*
	0.03 mg/l	Toluene	Urine	*

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
------------	-------	-------------	----------	---------------

0.02 mg/l

Toluene

Blood

*

* - For sampling details, please see the source document.

Exposure guidelines**US - California OELs: Skin designation**

Methanol (CAS 67-56-1)

Can be absorbed through the skin.

Toluene (CAS 108-88-3)

Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

Methanol (CAS 67-56-1)

Skin designation applies.

Toluene (CAS 108-88-3)

Skin designation applies.

US - Tennessee OELs: Skin designation

Methanol (CAS 67-56-1)

Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

Methanol (CAS 67-56-1)

Can be absorbed through the skin.

US NIOSH Pocket Guide to Chemical Hazards: Skin designation

Methanol (CAS 67-56-1)

Can be absorbed through the skin.

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower should be available when handling this product.

Individual protection measures, such as personal protective equipment**Eye/face protection**

Wear safety glasses with side shields (or goggles).

Skin protection**Hand protection**

Wear protective gloves such as: Nitrile. Neoprene. Polyvinyl alcohol (PVA).

Other

Wear appropriate chemical resistant clothing.

Respiratory protection

If engineering controls are not feasible or if exposure exceeds the applicable exposure limits, use a NIOSH-approved cartridge respirator with an organic vapor cartridge. Use a self-contained breathing apparatus in confined spaces and for emergencies. Air monitoring is needed to determine actual employee exposure levels.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

When using do not smoke. Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties**Appearance****Physical state**

Liquid.

Form

Aerosol.

Color

Clear.

Odor

Solvent.

Odor threshold

Not available.

pH

Not available.

Melting point/freezing point

-195.9 °F (-126.6 °C) estimated

Initial boiling point and boiling range

132.9 °F (56.1 °C) estimated

Flash point

0 °F (-17.8 °C) Tag Closed Cup

Evaporation rate

Fast.

Flammability (solid, gas)

Not available.

Upper/lower flammability or explosive limits**Flammability limit - lower (%)**

1 % estimated

Flammability limit - upper (%)	36 % estimated
Vapor pressure	4438 hPa estimated
Vapor density	> 1 (air = 1)
Relative density	0.84 estimated
Solubility (water)	Slightly soluble.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	539.6 °F (282 °C) estimated
Decomposition temperature	Not available.
Viscosity (kinematic)	Not available.
Percent volatile	92.4 % estimated

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Contact with incompatible materials. When exposed to extreme heat or hot surfaces, vapors may decompose to harmful or fatal corrosive gases such as formaldehyde.
Incompatible materials	Acids. Alkalies. Reducing agents. Strong oxidizing agents. Hypochlorites. Peroxides. Aluminum. Magnesium. Sodium. Zinc.
Hazardous decomposition products	Carbon oxides. Formaldehyde.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause damage to organs through prolonged or repeated exposure by inhalation. May cause drowsiness and dizziness. Headache. Nausea, vomiting.
Skin contact	Causes skin irritation.
Eye contact	Causes serious eye irritation.
Ingestion	Toxic if swallowed. Even small amounts (30-250 ml methanol) may be fatal. Symptoms are stomach ache, nausea, vomiting, dullness, visual disorder and blindness. Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia.

Symptoms related to the physical, chemical and toxicological characteristics

Headache. May cause drowsiness and dizziness. Nausea, vomiting. Aspiration may cause pulmonary edema and pneumonitis. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity May be fatal if swallowed and enters airways. Narcotic effects.

Product	Species	Test Results
Brakleen® Brake Parts Cleaner - Non-Chlorinated		
Acute		
Dermal		
LD50	Rabbit	6702 mg/kg estimated
Inhalation		
LC50	Rat	58 mg/l, 4 Hours estimated
Oral		
LD50	Human	110 mg/kg estimated
	Rat	5943 mg/kg estimated

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	Causes serious eye irritation.

Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	Based on available data, the classification criteria are not met.
IARC Monographs. Overall Evaluation of Carcinogenicity	
Not available.	
US. National Toxicology Program (NTP) Report on Carcinogens	
Not available.	
Reproductive toxicity	Suspected of damaging the unborn child.
Specific target organ toxicity - single exposure	Causes damage to organs (eyes) by ingestion. May cause drowsiness and dizziness.
Specific target organ toxicity - repeated exposure	May cause damage to organs through prolonged or repeated exposure: Liver. Kidneys. Lungs. Brain.
Aspiration hazard	May be fatal if swallowed and enters airways. If aspirated into lungs during swallowing or vomiting, may cause chemical pneumonia, pulmonary injury or death.
Chronic effects	May cause damage to organs through prolonged or repeated exposure. Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.

12. Ecological information

Ecotoxicity Toxic to aquatic life with long lasting effects.

Components		Species	Test Results
Acetone (CAS 67-64-1)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	10294 - 17704 mg/l, 48 hours
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	4740 - 6330 mg/l, 96 hours
Cyclohexane (CAS 110-82-7)			
Aquatic			
Fish	LC50	Fathead minnow (Pimephales promelas)	23.03 - 42.07 mg/l, 96 hours
Ethylbenzene (CAS 100-41-4)			
Aquatic			
<i>Acute</i>			
Crustacea	EC50	Water flea (Daphnia magna)	2.1 mg/l, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas)	12.1 mg/l, 96 hours
Methanol (CAS 67-56-1)			
Aquatic			
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	18000 - 20000 mg/l, 96 hours
<i>Acute</i>			
Crustacea	EC50	Water flea (Daphnia magna)	> 10000 mg/l, 48 hours
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	18000 - 20000 mg/l, 96 hours
Methylcyclohexane (CAS 108-87-2)			
Aquatic			
Fish	LC50	Striped bass (Morone saxatilis)	5.8 mg/l, 96 hours
n-Heptane (CAS 142-82-5)			
Aquatic			
<i>Acute</i>			
Fish	LC50	Fathead minnow (Pimephales promelas)	2.1 - 2.98 mg/l, 96 hours
Toluene (CAS 108-88-3)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	5.46 - 9.83 mg/l, 48 hours

Components	Species	Test Results
Fish	LC50 Coho salmon,silver salmon (Oncorhynchus kisutch)	8.11 mg/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)

Acetone	-0.24
Cyclohexane	3.44
Ethylbenzene	3.15
Methanol	-0.77
Methylcyclohexane	3.61
n-Heptane	4.66
Toluene	2.73

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal of waste from residues / unused products This material and its container must be disposed of as hazardous waste. 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. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose in accordance with all applicable regulations.

Hazardous waste code D001: Waste Flammable material with a flash point <140 F
F005: Waste Non-halogenated Solvent - Spent Non-halogenated Solvent

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number	UN1950
UN proper shipping name	Aerosols, flammable, Limited Quantity
Transport hazard class(es)	
Class	2.1
Subsidiary risk	6.1(PGIII)
Label(s)	2.1
Packing group	Not applicable.
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	N82
Packaging exceptions	306
Packaging non bulk	None
Packaging bulk	None

IATA

UN number	UN1950
UN proper shipping name	Aerosols, flammable, containing substances in Division 6.1, Packing Group III
Transport hazard class(es)	
Class	2.1
Subsidiary risk	6.1(PGIII)
Packing group	Not applicable.
Environmental hazards	No.
ERG Code	10P
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed with restrictions.
Cargo aircraft only	Allowed with restrictions.

IMDG

UN number UN1950
UN proper shipping name AEROSOLS
Transport hazard class(es)
Class 2
Subsidiary risk 6.1(PGIII)
Packing group Not applicable.
Environmental hazards No.
EmS Not available.
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

SARA 304 Emergency release notification

Not regulated.

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

Cyclohexane (CAS 110-82-7)
 Ethylbenzene (CAS 100-41-4)
 Methanol (CAS 67-56-1)
 Toluene (CAS 108-88-3)

CERCLA Hazardous Substance List (40 CFR 302.4)

Acetone (CAS 67-64-1)
 Cyclohexane (CAS 110-82-7)
 Ethylbenzene (CAS 100-41-4)
 Methanol (CAS 67-56-1)
 Toluene (CAS 108-88-3)

CERCLA Hazardous Substances: Reportable quantity

Acetone (CAS 67-64-1)	5000 LBS
Cyclohexane (CAS 110-82-7)	1000 LBS
Ethylbenzene (CAS 100-41-4)	1000 LBS
Methanol (CAS 67-56-1)	5000 LBS
Toluene (CAS 108-88-3)	1000 LBS

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center (800-424-8802) and to your Local Emergency Planning Committee.

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Methanol (CAS 67-56-1)
 Toluene (CAS 108-88-3)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.**Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number**

Acetone (CAS 67-64-1)	6532
Toluene (CAS 108-88-3)	6594

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Acetone (CAS 67-64-1)	35 %WV
Toluene (CAS 108-88-3)	35 %WV

DEA Exempt Chemical Mixtures Code Number

Acetone (CAS 67-64-1)	6532
Toluene (CAS 108-88-3)	594

FEMA Priority Substances Respiratory Health and Safety in the Flavor Manufacturing Workplace

Acetone (CAS 67-64-1)	Low priority
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Food and Drug Administration (FDA) Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Section 311/312 Immediate Hazard - Yes
Hazard categories Delayed Hazard - Yes
Fire Hazard - Yes
Pressure Hazard - Yes
Reactivity Hazard - No

SARA 302 Extremely hazardous substance No

US state regulations

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

Acetone (CAS 67-64-1)
Ethylbenzene (CAS 100-41-4)
Methanol (CAS 67-56-1)
Naphtha (petroleum), hydrotreated light (CAS 64742-49-0)
Toluene (CAS 108-88-3)

US. New Jersey Worker and Community Right-to-Know Act

3-Methylhexane (CAS 589-34-4)
Acetone (CAS 67-64-1)
Carbon dioxide (CAS 124-38-9)
Methylcyclohexane (CAS 108-87-2)
n-Heptane (CAS 142-82-5)

US. Massachusetts RTK - Substance List

3-Methylhexane (CAS 589-34-4)
Acetone (CAS 67-64-1)
Carbon dioxide (CAS 124-38-9)
Cyclohexane (CAS 110-82-7)
Methanol (CAS 67-56-1)
Methylcyclohexane (CAS 108-87-2)
n-Heptane (CAS 142-82-5)
Toluene (CAS 108-88-3)

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. Rhode Island RTK

Acetone (CAS 67-64-1)
Cyclohexane (CAS 110-82-7)
Methanol (CAS 67-56-1)
Toluene (CAS 108-88-3)

US. New Jersey Worker and Community Right-to-Know Act

Cyclohexane (CAS 110-82-7)
Methanol (CAS 67-56-1)
Toluene (CAS 108-88-3)

US. Pennsylvania Worker and Community Right-to-Know Law

Acetone (CAS 67-64-1)
Cyclohexane (CAS 110-82-7)
Methanol (CAS 67-56-1)
Toluene (CAS 108-88-3)
Benzene (CAS 71-43-2)
Ethylbenzene (CAS 100-41-4)
Xylene (CAS 1330-20-7)
3-Methylhexane (CAS 589-34-4)
Carbon dioxide (CAS 124-38-9)
Methylcyclohexane (CAS 108-87-2)
n-Heptane (CAS 142-82-5)

US. California Proposition 65

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

Benzene (CAS 71-43-2) Listed: February 27, 1987
Cumene (CAS 98-82-8) Listed: April 6, 2010

Ethanal (CAS 75-07-0)	Listed: April 1, 1988
Ethylbenzene (CAS 100-41-4)	Listed: June 11, 2004
Naphthalene (CAS 91-20-3)	Listed: April 19, 2002

US - California Proposition 65 - CRT: Listed date/Developmental toxin

Benzene (CAS 71-43-2)	Listed: December 26, 1997
Methanol (CAS 67-56-1)	Listed: March 16, 2012
Toluene (CAS 108-88-3)	Listed: January 1, 1991

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

Benzene (CAS 71-43-2)	Listed: December 26, 1997
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Volatile organic compounds (VOC) regulations

EPA

VOC content (40 CFR 51.100(s)) 84 %

Consumer products (40 CFR 59, Subpt. C) Not regulated

State

Consumer products This product is regulated as a Brake Cleaner. This product is not compliant to be sold for use in California, Connecticut, Delaware, the District of Columbia, Illinois, Indiana, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island and parts of Utah and Virginia.

VOC content (CA) 84 %

VOC content (OTC) 84 %

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	Yes
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply 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, including date of preparation or last revision

Issue date	05-13-2015
Revision date	01-13-2016
Prepared by	Allison Cho
Version #	02
Further information	CRC # 483A
HMIS® ratings	Health: 3* Flammability: 4 Physical hazard: 0 Personal protection: B
NFPA ratings	Health: 3 Flammability: 4 Instability: 0

NFPA ratings**Disclaimer**

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. This information is accurate to the best of CRC Industries' knowledge or obtained from sources believed by CRC to be accurate. Before using any product, read all warnings and directions on the label. For further clarification of any information contained on this (M)SDS consult your supervisor, a health & safety professional, or CRC Industries.

JELMAR
MATERIAL SAFETY DATA SHEET
CLR CALCIUM LIME & RUST REMOVER
ENHANCED FORMULA

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

Manufacturer: Jelmar
Address: 5550 W. Touhy Ave.
 Skokie, IL 60077

Emergency Phone Number: 1(800) 323-5497 (USA)
 Monday – Friday 8:30 A.M. – 4:30 P.M. CST
Emergency Contact: Chemtrec 1(800) 424-9300

Product Name: CLR Calcium Lime & Rust Remover (Enhanced Formula)
MSDS ID: 031004
Chemical Family: Aqueous Acidic Cleaner
Formula: Proprietary Mixture

SECTION 2 – HAZARDS IDENTIFICATION

PHYSICAL STATE: Liquid
COLOR: Crystal clear, lime green
ODOR: Slightly sour

WARNING OVERVIEW: Irritating to eyes, skin, respiratory tract and mucous membranes. Risk of burns to eyes, skin, and respiratory tract. May be harmful or fatal if swallowed. Use with adequate ventilation. Avoid breathing mist or dust. Keep container closed when not in use.

POTENTIAL HEALTH EFFECTS

ROUTES OF EXPOSURE: Eyes. Skin. Inhalation. Ingestion.

TARGET ORGANS: No data.

EYE CONTACT: Severe irritation and blurred vision. Effects may vary depending on length of exposure, solution concentration, and first aid measures. Prolonged contact may cause permanent damage.

SKIN CONTACT: Causes skin irritation. Prolonged contact may cause dermatitis, and itching.

INHALATION: Irritation, breathing difficulties, headaches, dizziness.

INGESTION: Oral burns, vomiting, and gastrointestinal disturbance.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE TO PRODUCT: Eye, skin, and respiratory disorders.

CANCER INFORMATION: This product does not contain >0.10% of the known potential carcinogens listed in NTP, IRAC, or OSHA.

DO NOT MIX WITH BLEACH, OR ANY OTHER PRODUCT AS TOXIC FUMES MAY RESULT. KEEP OUT OF REACH OF CHILDREN.

SECTION 3 - COMPOSITION /INFORMATION ON INGREDIENTS

<u>Component</u>	<u>CAS#</u>	<u>Osha Hazard</u>	<u>% by Weight</u>
1. Water	7732-18-5	NO	70-81
2. Lactic Acid	79-33-4	YES	15-20
3. Gluconic Acid	526-95-4	NO	2-4
4. Lauryldimethyl Hydroxysultaine	13197-76-7	NO	1-4
5. Propylene Glycol Normal Butyl Ether	5131-66-8	YES	1-2

SECTION 4 – FIRST AID MEASURES

EYE CONTACT: In case of eye contact, immediately rinse eye thoroughly with plenty of water. Remove contact lenses, and continue rinsing for at least 15 minutes. Get immediate medical attention.

JELMAR
MATERIAL SAFETY DATA SHEET
CLR CALCIUM LIME & RUST REMOVER
ENHANCED FORMULA

SKIN CONTACT: Can be irritating to skin, prolonged contact can be more severe, no adverse effects during normal usage. In case of skin contact, rinse area for at least 15 minutes. Remove contaminated clothing and shoes, wash thoroughly before reuse. Get immediate medical attention if irritation persists.

INHALATION: Not a significant route of exposure. Remove to fresh air. If breathing is difficult, GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION: DO NOT induce vomiting. If fully conscious, drink 16 ounces of water. CALL A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY. NEVER give an unconscious person anything to ingest.

SECTION 5 – FIRE FIGHTING MEASURES

FLAMMABILITY: Not flammable

FLASH POINT: None (100° C / 212° F): Method: TOC

EXPLOSIVE LIMITS IN AIR: Not available

EXTINGUISHING MEDIA: Not flammable. Use appropriate media for area. Water spray, dry chemical, alcohol foam or carbon dioxide.

FIRE FIGHTING METHODS: Evacuate area of personnel. Wear protective NIOSH-approved self-contained breathing apparatus. Remain upwind of fire to avoid hazardous vapors and decomposition products. Use water spray to cool fire-exposed containers. Run-off of large quantities of product from fire control may cause pollution. Contact appropriate agencies.

HAZARDOUS COMBUSTION PRODUCTS: Carbon Monoxide. Thermal decomposition can lead to irritating gases and vapors.

FIRE AND EXPLOSION HAZARDS: None known.

SECTION 6 – ACCIDENTAL RELEASES MEASURES

Steps to be taken in Case Material is Released or Spilled: Avoid contact with skin and eyes

Small Spill: No special clean-up procedure is necessary for small (less than 1 gallon) spills. Flush spill area with water. Wear rubber gloves.

Large Spill: Use personal protection recommended in Section 8. Isolate area, and deny entry to unnecessary and unprotected personnel. Dam spill, and absorb with earth, sand or similar material. Place in non-leaking containers. Dispose of collected material according to local, state, and federal regulations. Flush residue with large amount of water. Avoid direct discharge to sewers and surface waters.

SECTION 7- HANDLING AND STORAGE

STORAGE: Store in cool, well-ventilated area, away from heat. Keep containers tightly closed. Avoid contact with combustible materials, wood, and organic materials. Store in original container in a secure area away from children and pets.

HANDLING: Avoid contact with eyes, skin or clothing. May be harmful or fatal if swallowed. Use with adequate ventilation. Avoid breathing vapors or mist. Do not eat, drink, or smoke in work area. Wash hand thoroughly after use. Consumer size containers (14, 28, and 42 fluid ounces and gallon containers), should be rinsed and recycled. Empty 5gallon containers and 55gallon drums, may contain product residue in form of vapor, dried product, or liquid, and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE THESE CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY.

DO NOT MIX WITH BLEACH, OR ANY OTHER PRODUCTS AS TOXIC FUMES MAY RESULT. KEEP OUT OF REACH OF CHILDREN.

JELMAR
MATERIAL SAFETY DATA SHEET
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ENHANCED FORMULA

SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

VENTILATION REQUIREMENT: Avoid prolonged breathing mists or dusts of this product. Use with adequate ventilation. Do not use in closed or confined spaces.

RESPIRATORY PROTECTION: None required during normal household use. If product is used in an industrial setting, respiratory protection must be worn if ventilation does not eliminate symptoms or keep levels below recommended exposure limits. If mist or dust is present, wear NIOSH-Approved respirator for dusts and mists, NIOSH-Approved self-contained breathing apparatus, NIOSH-Approved full-face piece positive-pressure, air-supplied respirator. DO NOT exceed limits established by respirator manufacturer. Emergency responders should wear self-contained breathing apparatus (SCBA) to avoid inhalation of product.

EYE PROTECTION: Not required during normal household usage. Industrial users wear safety goggles. Do not wear contact lenses. Emergency responders should wear full eye and face protection.

SKIN PROTECTION: Rubber gloves with protective cuff. Emergency responders should wear impermeable gloves.

OTHER PROTECTION: Emergency responders should wear chemical type (impermeable) protective clothing and footwear where direct contact with chemicals in this product is possible.

WORK/HYGIENIC PRACTICES: Wash thoroughly with soap and water after use or handling.

EXPOSURE GUIDELINES:

COMPONENT	OSHA		ACGIH	
	PEL	STEL/C	TWA	STEL/C
1. Water	N.E.	N.E.	N.E.	N.E.
2. Lactic Acid	N.E.	N.E.	N.E.	N.E.
3. Gluconic Acid	N.E.	N.E.	N.E.	N.E.
4. Lauryldimethyl Hydroxysultaine	N.E.	N.E.	N.E.	N.E.
5. Propylene Glycol Normal Butyl Ether	N.E.	N.E.	N.E.	N.E.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Boiling point:	100° C / 212° F	Specific Gravity:	1.05 – 1.06
Vapor Pressure:	N.D.	Percent Volatiles:	~78.6% (Calculated)
Freezing Point:	N.D.	Evaporation Rate:	N.D. (nBuAc=1)
Melting Point:	N.D.	VOC (Wt%):	<1.5 (Calculated)
Vapor Density (mm Hg):	N.D.	VOC (LBS/GAL):	<0.13 (Calculated)
pH:	1.30-1.50	Solubility in Water:	100%

SECTION 10 – STABILITY AND REACTIVITY

STABILITY: Stable under normal conditions.

CONDITIONS TO AVOID: Avoid elevated temperatures.

INCOMPATIBLE MATERIALS: Strong oxidizing agents, metals, acids, and bases.

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition can lead to release of irritating gases and vapors and carbon oxides.

POSSIBILITY OF HAZARDOUS REACTIONS: No data.

SECTION 11 – TOXICOLOGICAL INFORMATION

LD₅₀ ORAL:	N.E.
LD₅₀ SKIN:	N.E.
LC₅₀ INHALATION:	N. E.

JELMAR
MATERIAL SAFETY DATA SHEET
CLR CALCIUM LIME & RUST REMOVER
ENHANCED FORMULA

SECTION 12- ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION: No data available.

CHEMICAL FATE INFORMATION: 28-day biodegradation = 60%. The matter is biodegradable.

SECTION 13 – DISPOSAL CONSIDERATIONS

HAZARDOUS WASTE NUMBER: D002

DISPOSAL METHOD: Dispose of in a permitted hazardous waste management facility following all local, state, and federal regulations.

DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION.

Follow label warnings, since containers may retain some residue of the product.

Processing, use or contamination of this product may change the waste management options. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. State and local disposal regulations may differ from federal disposal regulations.

SECTION 14 - TRANSPORTATION INFORMATION

DOT (Department of Transportation Proper Shipping Name): Not regulated by DOT.

Identification Number: N.A.

Packaging Group: N.A.

UN Number: N.A.

TDG Classification: Not Regulated

IMDG Classification: Not Regulated

IATA Classification: Passenger – Not Regulated

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

SECTION 15 – REGULATORY INFORMATION

FEDERAL REGULATIONS:

TSCA INVENTORY STATUS: All components of this product are listed on the TSCA Inventory or are exempt from TSCA Inventory requirements.

SARA TITTLE III SECTION 311/312 CATEGORY:

IMMEDIATE (ACUTE) HEALTH HAZARD:	YES
DELAYED (CHRONIC) HEALTH HAZARD:	YES
FIRE HAZARD:	NO
SUDDEN RELEASE OF PRESSURE:	NO
REACTIVE HAZARD:	NO

SARA SECTIONS 302/304/313/HAP:

COMPONENT	RQ (LBS) (1*)	RQ (LBS) (2*)	TPQ (LBS) (3*)	SEC 313 (4*)	HAP (5*)
1. Water	N.A.	N.A.	N.A.	NO	NO
2. Lactic Acid	N.A.	N.A.	N.A.	NO	NO
3. Gluconic Acid	N.A.	N.A.	N.A.	NO	NO
4. Lauryldimethyl Hydroxysultaine	N.A.	N.A.	N.A.	NO	NO
5. Propylene Glycol Normal Butyl Ether	N.A.	N.A.	N.A.	NO	NO

JELMAR
MATERIAL SAFETY DATA SHEET
CLR CALCIUM LIME & RUST REMOVER
ENHANCED FORMULA

REGULATORY AGENCIES

*1: CERCLA Reportable Quantity
 *2: SARA Reportable Quantity
 *3: SARA EHS Threshold Planning Quantity
 *4: SARA 313 Toxic Chemical / Category
 *5: U. S. EPA Hazardous Air Pollutant

INTERNATIONAL CHEMICAL INVENTORY STATUS:

EUROPEAN UNION (EINECS)	YES
JAPAN (METI)	YES
AUSTRALIA (ACIS)	YES
KOREA (KECL)	YES
CANADA (DSL)	YES
CANADA (NDSL)	NO
PHILIPPINES	YES

STATES RIGHT TO KNOW: California, New Jersey, Pennsylvania, Minnesota, Massachusetts, and Wisconsin. None.

The following statement is made in order to comply with the California State Drinking Water Act. California Proposition 65: This product does not contain any chemicals known to the State of California to cause cancer and/or to cause birth defects and other reproductive harm.

SECTION 16 – OTHER INFORMATION

NFPA Rating System: Health - 1 / Flammability - 0 / Reactivity - 0 / Special Hazard - None

Precautions to be taken in Handling and Storing: Avoid exposure to excess heat, and prevent from freezing.

Other Precautions: None required.

MSDS ABBREVIATIONS:

N. A.:	Not Applicable
N. D.:	Not Determined
N.E.:	Not Established
C:	Ceiling Limit
HAP:	Hazardous Air Pollutant
VOC:	Volatile Organic Compound

Revision: Format Change ANSI Z400.1-2004 October 2004 R. A. Gaudreault

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SAFETY DATA SHEET

COMPRESSOR OIL RP 268



000003001349

Version 5.1

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SECTION 1. IDENTIFICATION

Product name : COMPRESSOR OIL RP 268

Product code : CRP268CBE, CRP268DRP, CRP268DRM, CRP268, CRP268BLK

Manufacturer or supplier's details
Petro-Canada Lubricants Inc.
2310 Lakeshore Road West
Mississauga ON L5J 1K2
Canada

Emergency telephone number
Petro-Canada Lubricants Inc.: +1 905-403-5770;
CHEMTREC Transport Emergency: 1-800-424-9300;
Poison Control Centre: Consult local telephone directory for emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : Compressor Oil RP 268 is used for the lubrication of cylinders and rod packings in natural gas compressors having force-feed lubrication systems. It is recommended for use in compressing sour, wet or contaminated natural gas. It should NEVER be used in equipment compressing pure oxygen or other chemically active gases such as chlorine or hydrogen chloride.

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

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	viscous liquid
Colour	dark green
Odour	Mild petroleum oil like.

GHS Classification

Not a hazardous substance or mixture.

GHS label elements

Not a hazardous substance or mixture.

Potential Health Effects

Primary Routes of Entry : Eye contact
Ingestion
Inhalation

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Skin contact

Aggravated Medical Condition : None known.

Other hazards

None known.

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 carcinogen by ACGIH.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity	72623-85-9	30 - 50 %

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.

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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 fire-fighting : Cool closed containers exposed to fire with water spray.

Hazardous combustion products : Carbon oxides (CO, CO₂), sulphur oxides (SO_x), phosphorus oxides (PO_x), calcium oxides (CaO_x), aldehydes, hydrocarbons, metal oxides, 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.

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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

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity	72623-85-9	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 (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

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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 : dark green
- Odour : Mild petroleum oil like.
- Odour Threshold : No data available
- pH : No data available
- Pour point : -18 °C (-0.40 °F)
- Boiling point/boiling range : No data available
- Flash point : 278 °C (532 °F)
Method: Cleveland open cup
- Fire Point : 292 °C (558 °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 : 0.8951 kg/l (15 °C / 59 °F)
- Solubility(ies)
- Water solubility : insoluble

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Partition coefficient: n-octanol/water	:	No data available
Viscosity	:	
Viscosity, kinematic	:	269 cSt (40 °C / 104 °F)
	:	21.9 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, halogens and halogenated compounds.
Hazardous decomposition products	:	May release COx, SOx, SiOx, POx, methacrylate monomers, aldehydes, hydrocarbons, formaldehyde, 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

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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

No data available

Reproductive toxicity

No data available

STOT - single exposure

No data available

STOT - repeated exposure

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

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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 Regulations

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.

National Regulations

TDG

Not regulated as a dangerous good

SECTION 15. REGULATORY INFORMATION

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:

Internet: lubricants.petro-canada.com/sds
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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 SDS : Internet: lubricants.petro-canada.com/sds
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

Revision Date : 2017/01/27

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.



SAFETY DATA SHEET

1. Identification

Product identifier	Copper Anti-Seize & Lubricating Compound
Other means of identification	
Product code	14095
Recommended use	Anti-seize and lubricating compound
Recommended restrictions	None known.
Manufacturer/Importer/Supplier/Distributor information	
Manufactured or sold by:	
Company name	CRC Industries, Inc.
Address	885 Louis Dr. Warminster, PA 18974 US
Telephone	
General Information	215-674-4300
Technical Assistance	800-521-3168
Customer Service	800-272-4620
24-Hour Emergency (CHEMTREC)	800-424-9300 (US) 703-527-3887 (International)
Website	www.crcindustries.com

2. Hazard(s) identification

Physical hazards	Flammable aerosols Gases under pressure	Category 1 Liquefied gas
Health hazards	Not classified.	
Environmental hazards	Hazardous to the aquatic environment, acute hazard Hazardous to the aquatic environment, long-term hazard	Category 1 Category 1
OSHA defined hazards	Not classified.	
Label elements		



Signal word	Danger
Hazard statement	Extremely flammable aerosol. Contains gas under pressure; may explode if heated.
Precautionary statement	
Prevention	Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not spray on an open flame or other ignition source. Pressurized container: Do not pierce or burn, even after use. Do not apply while equipment is energized. Extinguish all flames, pilot lights and heaters. Vapors will accumulate readily and may ignite. Use only with adequate ventilation; maintain ventilation during use and until all vapors are gone. Open doors and windows or use other means to ensure a fresh air supply during use and while product is drying. Avoid release to the environment.
Response	Wash hands after handling.
Storage	Store in a well-ventilated place. Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F. Exposure to high temperature may cause can to burst.
Disposal	Dispose of contents/container in accordance with local/regional/national regulations.
Hazard(s) not otherwise classified (HNOC)	None known.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
distillates (petroleum), hydrotreated heavy naphthenic		64742-52-5	30 - 40
liquefied petroleum gas		68476-86-8	20 - 30
calcium carbonate		1317-65-3	5 - 10
residual oils (petroleum), hydrotreated		64742-57-0	5 - 10
talc (not containing asbestos fibers)		14807-96-6	5 - 10
aluminium, benzoate fatty acids (C=16-18) hydroxy complexes		82980-54-9	3 - 5
copper		7440-50-8	3 - 5

Specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation	Move to fresh air. If not breathing, give artificial respiration. Call a physician if symptoms develop or persist.
Skin contact	Wash off immediately with plenty of water. Take off contaminated clothing and wash before reuse. Get medical attention if irritation develops and persists.
Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
Ingestion	Do not induce vomiting. Call a physician immediately. Never give anything by mouth to a victim who is unconscious or is having convulsions.
Most important symptoms/effects, acute and delayed	Direct contact with eyes may cause temporary irritation.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Dry chemical powder. Carbon dioxide (CO ₂).
Unsuitable extinguishing media	Do not use a solid water stream as it may scatter and spread fire.
Specific hazards arising from the chemical	Contents under pressure. Pressurized container may rupture when exposed to heat or flame. During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.
Fire-fighting equipment/instructions	In case of fire: Stop leak if safe to do so. Move containers from fire area if you can do so without risk. Containers should be cooled with water to prevent vapor pressure build up.
General fire hazards	Extremely flammable aerosol. Contents under pressure. Pressurized container may rupture when exposed to heat or flame.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Wear appropriate protective equipment and clothing during clean-up. Emergency personnel need self-contained breathing equipment. Vapors are heavier than air and may spread along floors. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
--	--

Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. This product is miscible in water. Prevent product from entering drains. Stop the flow of material, if this is without risk. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage**Precautions for safe handling**

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. Use caution around energized equipment. The metal container will conduct electricity if it contacts a live source. This may result in injury to the user from electrical shock and/or flash fire. Avoid contact with eyes, skin, and clothing. Use only in well-ventilated areas. Wear appropriate personal protective equipment. Avoid release to the environment. Observe good industrial hygiene practices. For product usage instructions, please see the product label.

Conditions for safe storage, including any incompatibilities

Level 1 Aerosol.

Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50°C/122 °F. 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. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection**Occupational exposure limits****US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)**

Components	Type	Value	Form
calcium carbonate (CAS 1317-65-3)	PEL	5 mg/m ³	Respirable fraction.
copper (CAS 7440-50-8)	PEL	15 mg/m ³	Total dust.
		1 mg/m ³	Dust and mist.
		0.1 mg/m ³	Fume.
distillates (petroleum), hydrotreated heavy naphthenic (CAS 64742-52-5)	PEL	5 mg/m ³	Mist.
		2000 mg/m ³	
residual oils (petroleum), hydrotreated (CAS 64742-57-0)	PEL	500 ppm	
		5 mg/m ³	Mist.

US. OSHA Table Z-3 (29 CFR 1910.1000)

Components	Type	Value	Form
talc (not containing asbestos fibers) (CAS 14807-96-6)	TWA	0.3 mg/m ³	Total dust.
		0.1 mg/m ³	Respirable.
		20 mppcf	
		2.4 mppcf	Respirable.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
copper (CAS 7440-50-8)	TWA	1 mg/m ³	Dust and mist.
		0.2 mg/m ³	Fume.
distillates (petroleum), hydrotreated heavy naphthenic (CAS 64742-52-5)	TWA	5 mg/m ³	Inhalable fraction.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
residual oils (petroleum), hydrotreated (CAS 64742-57-0)	TWA	5 mg/m3	Inhalable fraction.
talc (not containing asbestos fibers) (CAS 14807-96-6)	TWA	2 mg/m3	Respirable fraction.

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
calcium carbonate (CAS 1317-65-3)	TWA	5 mg/m3	Respirable.
copper (CAS 7440-50-8) distillates (petroleum), hydrotreated heavy naphthenic (CAS 64742-52-5)	TWA	10 mg/m3	Total
	Ceiling	1 mg/m3	Dust and mist.
		1800 mg/m3	
residual oils (petroleum), hydrotreated (CAS 64742-57-0)	STEL	10 mg/m3	Mist.
	TWA	5 mg/m3	Mist.
	STEL	10 mg/m3	Mist.
talc (not containing asbestos fibers) (CAS 14807-96-6)	TWA	5 mg/m3	Mist.
	TWA	2 mg/m3	Respirable.

Biological limit values

No biological exposure limits noted for the ingredient(s).

Exposure guidelines

Occupational Exposure Limits are not relevant to the current physical form of the product.

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment**Eye/face protection**

Wear safety glasses with side shields (or goggles).

Skin protection**Hand protection**

Wear protective gloves such as: Nitrile. Polyvinyl chloride (PVC).

Other

Wear suitable protective clothing.

Respiratory protection

If engineering controls are not feasible or if exposure exceeds the applicable exposure limits, use a NIOSH-approved cartridge respirator with an organic vapor cartridge. Use a self-contained breathing apparatus in confined spaces and for emergencies. Air monitoring is needed to determine actual employee exposure levels.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

When using do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties**Appearance****Physical state**

Liquid.

Form

Aerosol.

Color

Copper.

Odor

Solvent.

Odor threshold

Not available.

pH

Not available.

Melting point/freezing point

Not available.

Initial boiling point and boiling range

680 °F (360 °C) estimated

Flash point	> 429.8 °F (> 221 °C)
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Vapor pressure	3249.3 hPa estimated
Vapor density	Not available.
Relative density	1.06
Solubility (water)	Negligible.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	500 °F (260 °C) estimated
Decomposition temperature	Not available.
Viscosity (kinematic)	Not available.
Percent volatile	68 % estimated

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Heat, flames and sparks. Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong acids. Strong bases. Strong oxidizing agents.
Hazardous decomposition products	Carbon oxides.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Prolonged or excessive inhalation may cause respiratory tract irritation.
Skin contact	Prolonged skin contact may cause temporary irritation.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	Health injuries are not known or expected under normal use.

Symptoms related to the physical, chemical and toxicological characteristics
 Direct contact with eyes may cause temporary irritation.

Information on toxicological effects

Acute toxicity

Product	Species	Test Results
Copper Anti-Seize & Lubricating Compound		
Acute		
Dermal		
LD50	Rabbit	9949 mg/kg calculated
Inhalation		
<i>Mist</i>		
LC50	Rat	72.4 mg/l, 4 hours calculated
Oral		
LD50	Rat	5309 mg/kg calculated

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Prolonged skin contact may cause temporary irritation.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

residual oils (petroleum), hydrotreated (CAS 64742-57-0) 3 Not classifiable as to carcinogenicity to humans.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Aspiration hazard	Based on available data, the classification criteria are not met.
Chronic effects	Prolonged exposure may cause chronic effects.

12. Ecological information

Ecotoxicity Very toxic to aquatic life with long lasting effects.

Components	Species	Test Results
copper (CAS 7440-50-8)		
Aquatic		
<i>Acute</i>		
Crustacea	EC50 Water flea (Daphnia magna)	0.03 mg/l, 48 hours
Fish	LC50 Rainbow trout,donaldson trout (Oncorhynchus mykiss)	0.052 mg/l, 96 hours
distillates (petroleum), hydrotreated heavy naphthenic (CAS 64742-52-5)		
Aquatic		
Crustacea	EC50 Water flea (Daphnia magna)	1000 mg/l, 48 hours
Fish	LC50 Rainbow trout,donaldson trout (Oncorhynchus mykiss)	5000 mg/l, 96 hours
talc (not containing asbestos fibers) (CAS 14807-96-6)		
Aquatic		
<i>Acute</i>		
Fish	LC50 Zebra danio (Danio rerio)	> 100 g/l, 96 hours

* Estimates for product may be based on additional component data not shown.

Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulative potential	No data available.
Mobility in soil	No data available.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal of waste from residues / unused products	This product is not a RCRA hazardous waste (See 40 CFR Part 261.20 – 261.33). Empty containers may be recycled. 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. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose in accordance with all applicable regulations.
Hazardous waste code	Not regulated.

Contaminated packaging

Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number	UN1950
UN proper shipping name	Aerosols, flammable, Limited Quantity
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Label(s)	2.1
Packing group	Not applicable.
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	N82
Packaging exceptions	306
Packaging non bulk	None
Packaging bulk	None

IATA

UN number	UN1950
UN proper shipping name	Aerosols, flammable, Limited Quantity
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Packing group	Not applicable.
ERG Code	10L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed with restrictions.
Cargo aircraft only	Allowed with restrictions.

IMDG

UN number	UN1950
UN proper shipping name	AEROSOLS, LIMITED QUANTITY
Transport hazard class(es)	
Class	2
Subsidiary risk	-
Packing group	Not applicable.
Environmental hazards	
Marine pollutant	No.
EmS	Not available.
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

SARA 304 Emergency release notification

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

copper (CAS 7440-50-8)

CERCLA Hazardous Substance List (40 CFR 302.4)

copper (CAS 7440-50-8)

Listed.

CERCLA Hazardous Substances: Reportable quantity

copper (CAS 7440-50-8)

5000 LBS

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center (800-424-8802) and to your Local Emergency Planning Committee.

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act (SDWA) Not regulated.**Food and Drug Administration (FDA)** Not regulated.**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

Section 311/312	Immediate Hazard - No
Hazard categories	Delayed Hazard - No
	Fire Hazard - Yes
	Pressure Hazard - Yes
	Reactivity Hazard - No

SARA 302 Extremely hazardous substance No**US state regulations****US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))**

copper (CAS 7440-50-8)
 distillates (petroleum), hydrotreated heavy naphthenic (CAS 64742-52-5)
 liquefied petroleum gas (CAS 68476-86-8)
 residual oils (petroleum), hydrotreated (CAS 64742-57-0)
 talc (not containing asbestos fibers) (CAS 14807-96-6)

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. Massachusetts RTK - Substance List

calcium carbonate (CAS 1317-65-3)
 copper (CAS 7440-50-8)
 residual oils (petroleum), hydrotreated (CAS 64742-57-0)
 talc (not containing asbestos fibers) (CAS 14807-96-6)

US. New Jersey Worker and Community Right-to-Know Act

calcium carbonate (CAS 1317-65-3)
 talc (not containing asbestos fibers) (CAS 14807-96-6)
 copper (CAS 7440-50-8)

US. Rhode Island RTK

copper (CAS 7440-50-8)

US. Pennsylvania Worker and Community Right-to-Know Law

copper (CAS 7440-50-8)
 calcium carbonate (CAS 1317-65-3)
 residual oils (petroleum), hydrotreated (CAS 64742-57-0)
 talc (not containing asbestos fibers) (CAS 14807-96-6)

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

Volatile organic compounds (VOC) regulations**EPA****VOC content (40 CFR 51.100(s))** 28.1 %**Consumer products (40 CFR 59, Subpt. C)** Not regulated**State****Consumer products** This product is regulated as an Anti-seize Lubricant (aerosol). This product is compliant for use in all 50 states.**VOC content (CA)** 28.1 %**VOC content (OTC)** 28.1 %

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	Yes
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply 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, including date of preparation or last revision

Issue date	04-21-2015
Revision date	07-19-2016
Prepared by	Allison Cho
Version #	03
Further information	Not available.
HMIS® ratings	Health: 2 Flammability: 3 Physical hazard: 0 Personal protection: B
NFPA ratings	Health: 2 Flammability: 3 Instability: 0

NFPA ratings



Disclaimer

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. This information is accurate to the best of CRC Industries' knowledge or obtained from sources believed by CRC to be accurate. Before using any product, read all warnings and directions on the label. For further clarification of any information contained on this (M)SDS consult your supervisor, a health & safety professional, or CRC Industries.

Revision Information

This document has undergone significant changes and should be reviewed in its entirety.

Material Safety Data Sheet

according to ANSI Z400.1- 2004 and 29 CFR 1910.1200



OFF!® DEEP WOODS® INSECT REPELLENT - DRY (REG. NO. 30097 P.C.P. ACT)

Version 2.1

Print Date 10/06/2014

Revision Date 09/29/2014

MSDS Number 350000015104

1. PRODUCT AND COMPANY IDENTIFICATION

Product information

Trade name : OFF! DEEP WOODS DRY INSECT REPELLENT - AEROSOL

Use of the Substance/Mixture : Insect Repellent

Company : S.C. Johnson and Son, Limited
1 Webster Street
Brantford ON N3T 5R1

Emergency telephone number : 24 Hour Transport & Medical Emergency Phone (866) 231-5406
24 Hour International Emergency Phone (952) 852-4647
24 Hour Canadian Transport Emergency Phone (CANUTEC) (613) 996-6666

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance / Odor : white / aerosol / pleasant

Immediate Concerns

: Warning
FLAMMABLE:
CAUSES EYE IRRITATION.
Keep away from heat, sparks and flame.
Harmful if swallowed.
Contents under pressure.
Do not puncture or incinerate.
Do not store at temperatures above 120 Deg. F (50 Deg C), as container may burst.
Avoid contact with eyes and lips.

Potential Health Effects

Exposure routes : Eye, Skin, Inhalation, Ingestion.

Eyes : Causes:
Moderate eye irritation

Skin : May cause skin reactions in rare cases.

Inhalation : May cause nose, throat, and lung irritation.
Inhalation may cause central nervous system effects.

Ingestion : Causes headache, drowsiness or other effects to the central nervous system.
Harmful if swallowed.

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Aggravated Medical Condition : Do not apply to cuts or irritated skin. Individuals with chronic respiratory disorders such as asthma, chronic bronchitis, emphysema, etc. may be more susceptible to irritating effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous chemicals present at or above reportable levels as defined by OSHA 29 CFR 1910.1200 or the Canadian Controlled Products Regulations are listed in this table:

Chemical Name	CAS-No.	Weight percent
N,N-Diethyl-m-toluamide	134-62-3	10.00 - 30.00
Ethyl alcohol	64-17-5	10.00 - 30.00
Butane	106-97-8	10.00 - 30.00
Corn starch	9005-25-8	10.00 - 30.00
Propane	74-98-6	5.00 - 10.00
Isobutane	75-28-5	5.00 - 10.00
Magnesium carbonate	546-93-0	1.00 - 5.00

For additional information on product ingredients, see www.whatsinsidescjohnson.com.

4. FIRST AID MEASURES

Eye contact : Remove contact lenses. Flush immediately with plenty of water for at least 15 to 20 minutes. Get medical attention if irritation develops and persists.

Skin contact : Wash off immediately with plenty of water. Get medical attention if irritation develops and persists. If you suspect a reaction to this product, discontinue use and remove contaminated clothing.

Inhalation : Remove to fresh air. If breathing is affected, get medical attention.

Ingestion : If swallowed, 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.

5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Specific hazards during : Aerosol Product - Containers may rocket or explode in heat of

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firefighting	fire. Do not allow run-off from fire fighting to enter drains or water courses. Burns with colourless flame.
Further information	: Fight fire from maximum distance or protected area. Cool and use caution when approaching or handling fire-exposed containers. For large quantities of flammable liquids, consider containment to prevent the spread of fire. Wear full protective clothing and positive pressure self-contained breathing apparatus. In case of fire and/or explosion do not breathe fumes.
Flash point	: < -7 °C < 19.4 °F Note: Propellant
Lower explosion limit	: Note: No data available
Upper explosion limit	: Note: No data available
NFPA Classification	: NFPA Level 2 Aerosol

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	: Remove all sources of ignition. Wear personal protective equipment.
Environmental precautions	: Do not flush into surface water or sanitary sewer system. Use appropriate containment to avoid environmental contamination. Outside of normal use, avoid release to the environment.
Methods for cleaning up	: If damage occurs to aerosol can: Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). Use only non-sparking equipment. Dike large spills. Clean residue from spill site.

7. HANDLING AND STORAGE

Handling

Advice on safe handling	: Do not puncture or incinerate. Avoid contact with eyes and lips. Avoid breathing vapours, mist or gas. For personal protection see section 8. Do not spray toward face. Do not use in areas without adequate ventilation.
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Use only as directed.
KEEP OUT OF REACH OF CHILDREN AND PETS.
Smoking, eating and drinking should be prohibited in the application area.

Advice on protection against fire and explosion : Keep away from heat and sources of ignition.
Take measures to prevent the build up of electrostatic charge.

Storage

Requirements for storage areas and containers : Do not store at temperatures above 120 Deg. F (50 Deg C), as container may burst.
Keep away from food, drink and animal feedingsuffs.
Keep in a dry, cool and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Components	CAS-No.	mg/m3	ppm	Non-standard units	Basis
Ethyl alcohol	64-17-5	-	1,000 ppm	-	ACGIH STEL
Butane	106-97-8	-	1,000 ppm	-	ACGIH STEL
Butane	106-97-8	-	1,000 ppm	-	ACGIH STEL
Corn starch	9005-25-8	10 mg/m3	-	-	ACGIH TWA
Propane	74-98-6	-	1,000 ppm	-	ACGIH TWA
Isobutane	75-28-5	-	1,000 ppm	-	ACGIH STEL

Personal protective equipment

Respiratory protection : Use only with adequate ventilation.
Do not spray in enclosed areas.

Hand protection : No special requirements.

Eye protection : Safety glasses with side-shields

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- Skin and body protection** : No special requirements.
- Hygiene measures** : Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly after handling. Smoking, eating and drinking should be prohibited in the application area.

9. PHYSICAL AND CHEMICAL PROPERTIES

- Form : aerosol
- Color : white
- Odor : pleasant
- pH : 10.3
(as aqueous solution)
- Boiling point : No data available
- Freezing point : No data available
- Flash point : < -7 °C
< 19.4 °F
Propellant
- Evaporation rate : No data available
- Flammability (solid, gas) : Sustains combustion
- Auto-ignition temperature : No data available
- Lower explosion limit : No data available
- Upper explosion limit : No data available
- Vapour pressure : No data available
- Density : 0.82 g/cm³
- Water solubility : dispersible
- Viscosity, dynamic : No data available
- Volatile Organic Compounds : 52.6 % - additional exemptions may apply
Total VOC (wt. %)* : *as defined by US Federal and State Consumer Product Regulations

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10. STABILITY AND REACTIVITY

- Conditions to avoid : Heat, flames and sparks.
- Materials to avoid : Strong oxidizing agents
Do not mix with bleach or any other household cleaners.
Strong bases
- Hazardous decomposition products : Thermal decomposition can lead to release of irritating gases and vapours.
- Hazardous reactions : If accidental mixing occurs and toxic gas is formed, exit area immediately. Do not return until well ventilated.

11. TOXICOLOGICAL INFORMATION

- Acute oral toxicity : LD50
estimated
Male: > 5,000 mg/kg
Female: >3,735 mg/kg
- Acute inhalation toxicity : LC50
estimated
> 2.79 mg/l
- Acute dermal toxicity : LD50
estimated
> 2,000 mg/kg
- Chronic effects**
- Carcinogenicity : None Anticipated
- Mutagenicity : None Anticipated
- Reproductive effects : None Anticipated
- Teratogenicity : None Anticipated
- Sensitisation : No data available

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12. ECOLOGICAL INFORMATION

Ecotoxicity effects : No data available

13. DISPOSAL CONSIDERATIONS

PESTICIDAL WASTE:

Observe all applicable Federal, Provincial and State regulations and Local/Municipal ordinances regarding disposal.

Consumer may discard empty container in trash, or recycle where facilities exist.

14. TRANSPORT INFORMATION

Land transport

▪ **U.S. DOT and Canadian TDG Surface Transportation:**

Proper shipping name AEROSOLS, Flammable, 2.1

Class: 2.1

UN number 1950

Packaging group: None.

Note: Limited quantities derogation may be applicable to this product, please check transport documents.

Sea transport

▪ **IMDG:**

Proper shipping name AEROSOLS, Flammable, 2.1

Class: 2

UN number: 1950

Packaging group: None.

EmS: F-D, S-U

Note: Limited quantities derogation may be applicable to this product, please check transport documents.

Air transport

▪ **ICAO/IATA:**

Proper shipping name AEROSOLS, Flammable, 2.1

Class: 2.1

UN/ID No.: UN 1950

Packaging group: None.

Note: SC Johnson typically does not ship products via air. Refer to IATA/ICAO Dangerous Goods Regulations for detailed instructions when shipping this item by air.

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15. REGULATORY INFORMATION

- Notification status : All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.
- Notification status : All ingredients of this product comply with the New Substances Notification requirements under the Canadian Environmental Protection Act (CEPA).
- California Prop. 65 : This product is not subject to the reporting requirements under California's Proposition 65.
- Canada Regulations : This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

16. OTHER INFORMATION

HMIS Ratings

Health	2
Flammability	4
Reactivity	0

NFPA Ratings

Health	2
Fire	4
Reactivity	0
Special	-

This information is being provided in accordance with Occupational Safety and Health Administration (OSHA) and Canada's Workplace Hazard Material Information System (WHMIS) regulations. The information supplied is designed for workplaces where product use and frequency of exposure exceeds that established for the labeled consumer use.

Further information

This document has been prepared using data from sources considered to be technically reliable. It does not constitute a warranty, expressed or implied, as to the accuracy of the information contained herein. Actual conditions of use are beyond the seller's control. User is responsible to evaluate all available information when using product for any particular use and to comply with all Federal, State, Provincial and Local laws and regulations.

Prepared by	SC Johnson Global Safety Assessment &
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Regulatory Affairs (GSARA)

MATERIAL SAFETY DATA SHEET

DIESEL EXHAUST FLUID

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Brenntag Canada Inc.
43 Jutland Rd.
Toronto, ON
M8Z 2G6
(416) 259-8231

WHMIS#: 00070093
Index: HCl9233/14D
Effective Date: 2014 November 10
Date of Revision: 2014 November 10

Website: <http://www.brenntag.ca>

EMERGENCY TELEPHONE NUMBER (For Emergencies Involving Chemical Spills or Releases)

1 855 273 6824

PRODUCT IDENTIFICATION

Product Name: Diesel Exhaust Fluid.
Chemical Name: Not available.
Synonyms: Diesel Exhaust Fluid, Ultrapure DEF, DEF, AC DELCO DEF.
Chemical Family: Not available.
Molecular Formula: Not available.
Product Use: Not available.

WHMIS Classification / Symbol:

D-2B: Toxic (skin and eye irritant)



READ THE ENTIRE MSDS FOR THE COMPLETE HAZARD EVALUATION OF THIS PRODUCT.

2. COMPOSITION, INFORMATION ON INGREDIENTS (Not Intended As Specifications)

<i>Ingredient</i>	<i>CAS#</i>	<i>ACGIH TLV (TWA)</i>	<i>% Concentration</i>
Urea	57-13-6	---	30 - 60

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Can decompose at high temperatures forming toxic gases. Contents may develop pressure on prolonged exposure to heat. See "Other Health Effects" Section.

POTENTIAL HEALTH EFFECTS

Inhalation: Prolonged or repeated overexposure to mists may cause mild respiratory irritation. Excessive contact with mist or spray may cause irritation of mucous membranes, coughing and difficulty in breathing. See "Other Health Effects" Section.

Skin Contact: Skin contact can cause irritation, especially under the finger nails (and other confined spaces such as under rings or watch bands). May cause defatting, drying and cracking of the skin. Prolonged and repeated contact may lead to dermatitis.

Skin Absorption: Not likely to be absorbed through the skin.

Eye Contact: Causes eye irritation. Burns can occur if not promptly removed.

Ingestion: This product causes irritation, a burning sensation of the mouth and throat and abdominal pain.

Other Health Effects: Effects (irritancy) on the skin and eyes may be delayed, and damage may occur without the sensation or onset of pain. Strict adherence to first aid measures following any exposure is essential.

Solutions are corrosive to most metals. Urea forms corrosive solutions when dissolved in water. High blood concentration of urea increases the risk of glaucoma. May induce osmotic diuresis. Osmotic diuresis is a condition caused by a high concentration of osmotically active substances in the renal tubules (Urea, Sodium Sulphate), which limit the reabsorption of water. (8) May cause central nervous system (CNS) depression. CNS depression is characterized by headache, dizziness, drowsiness, nausea, vomiting and incoordination. Severe overexposures may lead to coma and possible death due to respiratory failure.

Anecdotal evidence has shown that the development of first and second degree burns to skin may result from delayed implementation of first aid measures, especially if the liquid material is held in close contact with the skin by contaminated clothing for prolonged periods of time. (6)

See Section 11, "Other Studies Relevant to Material".

4. FIRST AID MEASURES

FIRST AID PROCEDURES

Inhalation: If respiratory problems arise, move the victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Give cardiopulmonary resuscitation (CPR) if there is no breathing AND no pulse. Obtain medical advice IMMEDIATELY.

Skin Contact: Flush skin with running water for a minimum of 20 minutes. Start flushing while removing contaminated clothing. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY.

Eye Contact: Immediately flush eyes with running water for a minimum of 20 minutes. Hold eyelids open during flushing. Take care not to rinse contaminated water into the unaffected eye or onto the face. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY.

Ingestion: Do not attempt to give anything by mouth to an unconscious person. If victim is alert and not convulsing, rinse mouth out and give 1/2 to 1 glass of water to dilute material. DO NOT induce vomiting. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. Obtain medical attention IMMEDIATELY.

Note to Physicians: This product contains materials that may cause severe pneumonitis if aspirated. If ingestion has occurred less than 2 hours earlier, carry out careful gastric lavage; use endotracheal cuff if available, to prevent aspiration. Observe patient for respiratory difficulty from aspiration pneumonitis. Give artificial resuscitation and appropriate chemotherapy if respiration is depressed.

Medical conditions that may be aggravated by exposure to this product include diseases of the skin, eyes or respiratory tract.

5. FIRE-FIGHTING MEASURES

Flashpoint (°C)	Autolgnition Temperature (°C)	Flammability Limits in Air (%):	
		LEL	UEL
Non-combustible (does not burn).	Not applicable.	Not applicable.	Not applicable.
Flammability Class (WHMIS):	Not regulated.		
Hazardous Combustion Products:	Thermal decomposition products are toxic and may include Ammonia, cyanuric acid, biuret, cyanic acid, oxides of carbon, nitrogen and irritating gases.		
Unusual Fire or Explosion Hazards:	Closed containers exposed to heat may burst. Spilled material may cause floors and contact surfaces to become slippery.		
Sensitivity to Mechanical Impact:	Urea: Hypochlorites may react with primary amines to form nitrogen trichloride which explodes spontaneously in air.		
Rate of Burning:	Not expected to be sensitive to mechanical impact.		
Explosive Power:	Not available.		
Sensitivity to Static Discharge:	Not available.		

EXTINGUISHING MEDIA

Fire Extinguishing Media: Use media appropriate for surrounding fire and/or materials.

**FIRE FIGHTING
INSTRUCTIONS**

Instructions to the Fire Fighters: Isolate materials that are not involved in the fire and protect personnel. Cool containers with flooding quantities of water until well after the fire is out. Spilled material may cause floors and contact surfaces to become slippery.

Fire Fighting Protective Equipment: Use self-contained breathing apparatus and protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Information in this section is for responding to spills, leaks or releases in order to prevent or minimize the adverse effects on persons, property and the environment. There may be specific reporting requirements associated with spills, leaks or releases, which change from region to region.

Containment and Clean-Up Procedures: In all cases of leak or spill contact vendor at Emergency Number shown on the front page of this MSDS. Wear protective clothing. Recover spilled material on non-combustible absorbents, such as sand or vermiculite, and place in covered containers for disposal. Collect product for recovery or disposal. For release to land, or storm water runoff, contain discharge by constructing dikes or applying inert absorbent; for release to water, utilize damming and/or water diversion to minimize the spread of contamination. Ventilate enclosed spaces. Notify applicable government authority if release is reportable or could adversely affect the environment. Spilled material may cause floors and contact surfaces to become slippery.

7. HANDLING AND STORAGE

HANDLING

Handling Practices: Use normal "good" industrial hygiene and housekeeping practices. Containers exposed to heat may be under internal pressure. These should be cooled and carefully vented before opening. A face shield and apron should be worn. Vent container frequently, and more often in warm weather, to relieve pressure.

Ventilation Requirements: See Section 8, "Engineering Controls".

Other Precautions: Use only with adequate ventilation and avoid breathing aerosols (vapours or mists). Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Wash contaminated clothing thoroughly before re-use.

STORAGE

Storage Temperature (°C): See below.

Ventilation Requirements: General exhaust is acceptable.

Storage Requirements: Store in a cool, well-ventilated area. Keep away from heat, sparks and flames. Keep containers closed. Do not expose sealed containers to temperatures above 40° C.

Special Materials to be Used for Packaging or Containers: Confirm suitability of any material before using.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Recommendations listed in this section indicate the type of equipment, which will provide protection against overexposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

ENGINEERING CONTROLS

Engineering Controls: General exhaust is acceptable. Local exhaust ventilation preferred. Make up air should be supplied to balance air that is removed by local or general exhaust ventilation. Ventilate low lying areas such as sumps or pits where dense vapours may collect.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Eye Protection: Safety glasses with side shields are recommended to prevent eye contact. Use full face-shield or chemical safety goggles when there is potential for contact. Contact lenses should not be worn when working with this material.

Skin Protection: Gloves and protective clothing made from butyl rubber, natural rubber, nitrile rubber or PVC should be impervious under conditions of use. Do not use gloves or protective clothing made from leather. Prior to use, user should confirm impermeability. Discard contaminated gloves.

Respiratory Protection: No specific guidelines available. Respiratory protection should not be necessary unless a mist is created. A NIOSH/MSHA-approved air-purifying respirator equipped with organic vapour cartridges for concentrations up to 1 000 ppm organic vapours. Use an air-supplied respirator if concentrations are high or unknown.

If while wearing a respiratory protection, you can smell, taste or otherwise detect anything unusual, or in the case of a full facepiece respirator you experience eye irritation, leave the area immediately. Check to make sure the respirator to face seal is still good. If it is, replace the filter, cartridge or canister. If the seal is no longer good, you may need a new respirator. (6)

Other Personal Protective Equipment: Wear regular work clothing. The use of coveralls is recommended. Locate safety shower and eyewash station close to chemical handling area. Take all precautions to avoid personal contact.

EXPOSURE GUIDELINES

None established for this product.

9. PHYSICAL AND CHEMICAL PROPERTIES (Not intended as Specifications)

Physical State:	Liquid.
Appearance:	Colourless to slightly hazy liquid.
Odour:	Ammonia odour.
Odour Threshold (ppm):	Not available.
Boiling Range (°C):	104 - 106 (3)
Melting/Freezing Point (°C):	Not available.
Vapour Pressure (mm Hg at 20° C):	Not available.
Vapour Density (Air = 1.0):	Not available.
Relative Density (g/cc):	1.08 - 1.14 (3)
Bulk Density:	Not available.
Viscosity:	Not available.
Evaporation Rate (Butyl Acetate = 1.0):	Not available.
Solubility:	100%
% Volatile by Volume:	Not available.
pH:	9.8 - 10 (3)
Coefficient of Water/Oil Distribution:	Not available.
Volatile Organic Compounds (VOC):	Not available.
Flashpoint (°C):	Non-combustible (does not burn).

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY

Under Normal Conditions:	Stable.
Under Fire Conditions:	Not flammable.
Hazardous Polymerization:	Will not occur.
Conditions to Avoid:	High temperatures, sparks, open flames and all other sources of ignition. Do not evaporate to dryness.
Materials to Avoid:	Strong oxidizers. Reducing agents. Hypochlorites. Halogens. Acids. Alkalies. Acrylonitrile-Butadiene-Styrene. Polyethylene. Iron and its alloys. Copper and its alloys. Aluminum and its alloys. Zinc and its alloys. Mild steel. Sodium Nitrite. Potassium Nitrite. Chromyl Chloride. Nitrosyl Perchlorate. Gallium Perchlorate. Titanium Tetrachloride. Sodium Hypochlorite, Calcium Hypochlorite or Phosphorus Pentachloride reacts with urea to form nitrogen trichloride which explodes spontaneously in air. (4)
Decomposition or Combustion Products:	Thermal decomposition products are toxic and may include Ammonia, cyanuric acid, biuret, cyanic acid, oxides of carbon, nitrogen and irritating gases.

11. TOXICOLOGICAL INFORMATION

TOXICOLOGICAL DATA:

SUBSTANCE	LD50 (Oral, Rat)	LD50 (Dermal, Rabbit)	LC50 (Inhalation, Rat, 4h)
Urea	8 471 - 14 300 mg/kg (1,3)	---	---
Carcinogenicity Data:	The ingredient(s) of this product is (are) not classed as carcinogenic by ACGIH, IARC, OSHA or NTP.		
Reproductive Data:	No adverse reproductive effects are anticipated.		
Mutagenicity Data:	No adverse mutagenic effects are anticipated.		
Teratogenicity Data:	No adverse teratogenic effects are anticipated.		
Respiratory / Skin Sensitization Data:	None known.		
Synergistic Materials:	Application of urea to guinea pig skin increased a subsequent sensitization reaction to epoxy resins. (4)		
Other Studies Relevant to Material:	Urea: Application of a saturated urea solution to rabbit eyes caused the loss of corneal epithelium after 5 minutes, with slow regeneration. Application of a 10 % solution to human eyes, several times a day, for one year caused no irritation or discomfort. (4) Male and female rats were administered a 0.45 %, 0.9 % or 4.5 % (approximately 225, 450 or 2,250 mg/Kg/day) urea in the diet with no adverse effects. (4) Bacterial reverse mutation assay- Negative ; Chinese Hamster -Chromosomal aberration test - Positive (very high dose); Mouse -positive (very high dose). (3) No toxic effects on mouse gonads up to 6,750-mg/kg day. No toxic effects on rat gonads up to 2,250-mg/kg day. (3)		

12. ECOLOGICAL INFORMATION

Ecotoxicity:	Will slowly release ammonia and degrade to nitrate. Ammonia is toxic to fish. However, ammonia release is slow making urea much less toxic than ammonium salts. Non-persistent and non-cumulative when applied using normal agricultural practices. The product itself and its products of degradation are not harmful under normal conditions of careful and responsible use. Urea will promote algae growth and may degrade the quality and taste of water. (3) Urea: 96-hour LC50 (Barillius barna) > 9 100 mg/L. (3) 48-hour EC50 (Daphnia magna) 3 910 mg/L. (3)
Environmental Fate:	Can be dangerous if allowed to enter drinking water intakes. Do not contaminate domestic or irrigation water supplies, lakes, streams, ponds, or rivers. Urea: When released to soil, Urea will hydrolyze into ammonium in a matter of days to several weeks. When released into the soil, Urea may leach into groundwater. When released into water, Urea may biodegrade to a moderate extent. When released into water, Urea is not expected to evaporate significantly. This material has an experimentally-determined bioconcentration factor (BCF) of less than 100. Urea is not expected to significantly bioaccumulate. When released into the air, Urea is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, Urea is expected to have a half-life of less than 1 day. (3)

13. DISPOSAL CONSIDERATIONS

Deactivating Chemicals:	None required.
Waste Disposal Methods:	This information applies to the material as manufactured. 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. Dispose of waste material at an approved (hazardous) waste treatment/disposal facility in accordance with applicable local, provincial and federal regulations. Do not dispose of waste with normal garbage, or to sewer systems.
Safe Handling of Residues:	See "Waste Disposal Methods".
Disposal of Packaging:	Empty containers retain product residue. Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. Do not dispose of package until thoroughly washed out.

14. TRANSPORTATION INFORMATION

CANADIAN TDG ACT SHIPPING DESCRIPTION:

This product is not regulated by TDG.

Label(s): Not applicable. Placard: Not applicable.

ERAP Index: ----- Exemptions: None known.

This product is transported warm (25 to 35 Degrees Celsius). Storage and shipping requires insulated tanks and tank cars to prevent crystallization of urea.

US DOT CLASSIFICATION (49CFR 172.101, 172.102):

This product is not regulated by DOT.

Label(s): Not applicable. Placard: Not applicable.

CERCLA-RQ: Not available. Exemptions: None known.

This product is transported warm (25 to 35 Degrees Celsius). Storage and shipping requires insulated tanks and tank cars to prevent crystallization of urea.

15. REGULATORY INFORMATION

CANADA

CEPA - NSNR: All components of this product are included on the DSL.

CEPA - NPRI: Not included.

Controlled Products Regulations Classification (WHMIS):

D-2B: Toxic (skin and eye irritant)

USA

Environmental Protection Act: All components of this product are included on the TSCA inventory.

OSHA HCS (29CFR 1910.1200): Not regulated.

NFPA: 2 Health, 0 Fire, 0 Reactivity (3)

HMIS: 2 Health, 0 Fire, 0 Reactivity (3)

INTERNATIONAL

Urea is found on the following inventories: EINECS (European Inventory of Existing Commercial Chemical Substances).

16. OTHER INFORMATION

REFERENCES

1. RTECS-Registry of Toxic Effects of Chemical Substances, Canadian Centre for Occupational Health and Safety RTECS database.
2. Clayton, G.D. and Clayton, F.E., Eds., Patty's Industrial Hygiene and Toxicology, 3rd ed., Vol. IIA,B,C, John Wiley and Sons, New York, 1981.
3. Supplier's Material Safety Data Sheet(s).
4. CHEMINFO chemical profile, Canadian Centre for Occupational Health and Safety, Hamilton, Ontario, Canada.
5. Guide to Occupational Exposure Values, 2011, American Conference of Governmental Industrial Hygienists, Cincinnati, 2011.
6. Regulatory Affairs Group, Brenntag Canada Inc.
7. The British Columbia Drug and Poison Information Centre, Poison Managements Manual, Canadian Pharmaceutical Association, Ottawa, 1981.

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Winter Treat Plus

Safety Data Sheet

according to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012

Date of issue: 06/01/2015

Revision date: 06/01/2015

Version: 1.0

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name : Winter Treat Plus
Product code : 103051, 103052, 103073

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

Use of the substance/mixture : Motor Fuel Additive

1.3. Details of the supplier of the safety data sheet

R.B. Howes & Co., Inc. / Howes Lubricator
60 Ocean State Drive
North Kingstown, RI
T 401-294-5500, 1-800 GET HOWES (438-4693)

1.4. Emergency telephone number

Emergency number : CHEMTREC 1 (800) 424-9300

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Flammable Liquid 3
Skin Irritation 2
Eye Irritation 2A
Carcinogenicity 2
Specific target organ toxicity - Repeated exposure 1
Aspiration Toxicity 1

2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US) :



Signal word (GHS-US) :

Danger

Hazard statements (GHS-US) :

Flammable liquid and vapor. Causes skin irritation. Causes serious eye irritation. Suspected of causing cancer. Causes damage to organs through prolonged or repeated exposure. May be fatal if swallowed and enters airways.

Precautionary statements (GHS-US) :

Keep away from heat/sparks/open flames/hot surfaces.— No smoking. Keep container tightly closed. Ground/Bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Wash hands thoroughly after handling. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection. Do not breathe dust/fume/gas/mist/vapors/spray. Do not eat, drink or smoke when using this product. If exposed or concerned: Get medical advice/attention. If on skin (or hair): Take off immediately all contaminated clothing and wash it before reuse. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/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 advice/attention. If swallowed: Immediately call a poison center/doctor. Do NOT induce vomiting. Store in a well-ventilated place. Keep cool. Store locked up. Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3. Other hazards

No additional information available.

2.4. Unknown acute toxicity (GHS-US)

34 percent of the mixture consists of ingredient(s) of unknown acute toxicity.

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SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable.

3.2. Mixture

Name	Product identifier	%	GHS-US classification
Distillates, petroleum, hydrotreated middle	(CAS No) 64742-46-7	15 - 40	Flam. Liq. 4 Acute Tox. 4 (Inhalation) Asp. Tox. 1
Stoddard solvent	(CAS No) 8052-41-3	15 - 40	Skin Irrit. 2 STOT RE 1 Asp. Tox. 1
Petroleum distillates, hydrotreated light	(CAS No) 64742-47-8	10 - 30	Flam. Liq. 3 Asp. Tox. 1
Solvent naphtha, petroleum, light aromatic	(CAS No) 64742-95-6	7 - 13	Flam. Liq. 3 Skin Irrit. 2 Eye Irrit. 2A Asp. Tox. 1
Benzene, 1,2,4-trimethyl-	(CAS No) 95-63-6	7 - 13	Flam. Liq. 3 Acute Tox. 4 (Inhalation) Skin Irrit. 2 Eye Irrit. 2A STOT SE 3
Solvent naphtha, petroleum, heavy aromatic	(CAS No) 64742-94-5	1 - 5	Flam. Liq. 3 Asp. Tox. 1
Fatty acid amine reaction product	Trade secret	1 - 5	Skin Irrit. 2 Eye Irrit. 2A
Xylenes (o-, m-, p- isomers)	(CAS No) 1330-20-7	1 - 5	Flam. Liq. 3 Acute Tox. 4 (Dermal) Acute Tox. 4 (Inhalation) Skin Irrit. 2 Eye Irrit. 2A
1,3,5-Trimethylbenzene	(CAS No) 108-67-8	1 - 5	Flam. Liq. 3 Skin Irrit. 2 Eye Irrit. 2A STOT SE 3 Asp. Tox. 1
1,2,3-Trimethylbenzene	(CAS No) 526-73-8	1 - 5	Flam. Liq. 3 Skin Irrit. 2 Eye Irrit. 2A STOT SE 3
Nonane	(CAS No) 111-84-2	1 - 5	Flam. Liq. 3 Acute Tox. 4 (Inhalation) Skin Irrit. 2 STOT SE 3 Asp. Tox. 1
Naphthalene	(CAS No) 91-20-3	0.5 - 1.5	Acute Tox. 4 (Oral) Carc. 2
Ethylbenzene	(CAS No) 100-41-4	0.1 - 1	Flam. Liq. 2 Acute Tox. 4 (Inhalation) Skin Irrit. 2 Eye Irrit. 2B Carc. 2 Asp. Tox. 1
Cumene	(CAS No) 98-82-8	< 0.1	Flam. Liq. 3 Carc. 2 STOT SE 3 Asp. Tox. 1

* The specific chemical identity and exact percentage (concentration) of composition has been withheld as a trade secret in accordance with paragraph (i) of §1910.1200.

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation	: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical advice/attention if you feel unwell.
First-aid measures after skin contact	: In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician if irritation develops and persists.
First-aid measures after eye contact	: In case of contact, immediately flush eyes with plenty of water. Remove contact lenses, if worn. If irritation persists, get medical attention.
First-aid measures after ingestion	: If swallowed, do NOT induce vomiting. Never give anything by mouth to an unconscious person. Get immediate medical advice/attention.

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4.2. Most important symptoms and effects, both acute and delayed

- Symptoms/injuries after inhalation : May cause respiratory tract irritation. Vapours may cause drowsiness and dizziness.
- Symptoms/injuries after skin contact : Causes skin irritation. Symptoms may include redness, edema, drying, defatting and cracking of the skin.
- Symptoms/injuries after eye contact : Causes serious eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with possible redness and swelling.
- Symptoms/injuries after ingestion : May be fatal if swallowed and enters airways. This product may be aspirated into the lungs and cause chemical pneumonitis. May cause stomach distress, nausea or vomiting.

4.3. Indication of any immediate medical attention and special treatment needed

Symptoms may not appear immediately. In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Powder, water fog, foam, carbon dioxide.
- Unsuitable extinguishing media : Do not use water jet.

5.2. Special hazards arising from the substance or mixture

- Fire hazard : Products of combustion may include, and are not limited to: oxides of carbon.

5.3. Advice for firefighters

- Protection during firefighting : Keep upwind of fire. Wear full fire fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA). Use water spray to keep fire-exposed containers cool.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Eliminate sources of ignition.

6.2. Methods and material for containment and cleaning up

- For containment : Contain and/or absorb spill with inert material (e.g. sand, vermiculite), then place in a suitable container. Do not flush to sewer or allow to enter waterways. Use appropriate Personal Protective Equipment (PPE).
- Methods for cleaning up : Scoop up material and place in a disposal container. Spilled material may present a slipping hazard. Provide ventilation.

6.3. Reference to other sections

See section 8 for further information on protective clothing and equipment and section 13 for advice on waste disposal.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Keep away from sources of ignition - No smoking. Avoid contact with skin and eyes. Do not breathe dust/fume/gas/mist/vapors/ spray. Do not swallow. Handle and open container with care. When using do not eat, drink or smoke. Use only outdoors or in a well-ventilated area.
- Hygiene measures : Launder contaminated clothing before reuse. Wash hands before eating, drinking, or smoking.

7.2. Conditions for safe storage, including any incompatibilities

- Technical measures : Proper grounding procedures to avoid static electricity should be followed.
- Storage conditions : Keep locked up and out of reach of children. Keep container tightly closed and in a well-ventilated place. Keep cool.

7.3. Specific end use(s)

Not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Distillates, petroleum, hydrotreated middle (64742-46-7)

ACGIH	Not applicable
OSHA	Not applicable

Stoddard solvent (8052-41-3)

ACGIH	ACGIH TWA (ppm)	100 ppm
OSHA	OSHA PEL (TWA) (mg/m ³)	2900 mg/m ³

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Stoddard solvent (8052-41-3)		
OSHA	OSHA PEL (TWA) (ppm)	500 ppm
Petroleum distillates, hydrotreated light (64742-47-8)		
ACGIH	Not applicable	
OSHA	Not applicable	
Solvent naphtha, petroleum, light aromatic (64742-95-6)		
ACGIH	Not applicable	
OSHA	Not applicable	
Benzene, 1,2,4-trimethyl- (95-63-6)		
ACGIH	Not applicable	
OSHA	Not applicable	
Solvent naphtha, petroleum, heavy aromatic (64742-94-5)		
ACGIH	Not applicable	
OSHA	Not applicable	
Fatty acid amine reaction product		
ACGIH	Not applicable	
OSHA	Not applicable	
Xylenes (o-, m-, p- isomers) (1330-20-7)		
ACGIH	ACGIH TWA (ppm)	100 ppm
ACGIH	ACGIH STEL (ppm)	150 ppm
OSHA	OSHA PEL (TWA) (mg/m ³)	435 mg/m ³
OSHA	OSHA PEL (TWA) (ppm)	100 ppm
1,3,5-Trimethylbenzene (108-67-8)		
ACGIH	ACGIH TWA (ppm)	25 ppm
OSHA	Not applicable	
1,2,3-Trimethylbenzene (526-73-8)		
ACGIH	Not applicable	
OSHA	Not applicable	
Nonane (111-84-2)		
ACGIH	ACGIH TWA (ppm)	200 ppm
OSHA	Not applicable	
Naphthalene (91-20-3)		
ACGIH	ACGIH TWA (ppm)	10 ppm
OSHA	OSHA PEL (TWA) (mg/m ³)	50 mg/m ³
OSHA	OSHA PEL (TWA) (ppm)	10 ppm
Ethylbenzene (100-41-4)		
ACGIH	ACGIH TWA (ppm)	20 ppm
OSHA	OSHA PEL (TWA) (mg/m ³)	435 mg/m ³
OSHA	OSHA PEL (TWA) (ppm)	100 ppm
Cumene (98-82-8)		
ACGIH	ACGIH TWA (ppm)	50 ppm
OSHA	OSHA PEL (TWA) (mg/m ³)	245 mg/m ³

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Cumene (98-82-8)

OSHA	OSHA PEL (TWA) (ppm)	50 ppm
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8.2. Exposure controls

Appropriate engineering controls	: Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, etc.) below recommended exposure limits.
Hand protection	: Wear chemically resistant protective gloves.
Eye protection	: Wear eye protection.
Skin and body protection	: Wear suitable protective clothing.
Respiratory protection	: In case of insufficient ventilation, wear suitable respiratory equipment. 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.
Environmental exposure controls	: Maintain levels below Community environmental protection thresholds.
Other information	: Do not eat, smoke or drink where material is handled, processed or stored. Wash hands carefully before eating or smoking. Handle according to established industrial hygiene and safety practices.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: No data available
Colour	: Light amber
Odour	: Distinctive
Odour threshold	: No data available
pH	: No data available
Melting point	: No data available
Freezing point	: No data available
Boiling point	: No data available
Flash point	: 54.4 °C (130 °F)
Relative evaporation rate (butylacetate=1)	: No data available
Flammability (solid, gas)	: Flammable
Explosive limits	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available
Vapour pressure	: < 0.1 mm Hg
Relative density	: < 0.9 (H ₂ O = 1)
Relative vapour density at 20 °C	: > 1 (air = 1)
Solubility	: Insoluble.
Partition coefficient: n-octanol/water	: No data available
Log Kow	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	: No data available
Viscosity, kinematic	: < 20.5 cSt @ 40 °C (104 °F)
Viscosity, dynamic	: No data available

9.2. Other information

VOC content	: 715 g/l
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SECTION 10: Stability and reactivity

10.1. Reactivity

No dangerous reaction known under conditions of normal use.

10.2. Chemical stability

Stable under normal storage conditions.

10.3. Possibility of hazardous reactions

No dangerous reaction known under conditions of normal use.

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10.4. Conditions to avoid

Heat. Incompatible materials. Sources of ignition.

10.5. Incompatible materials

Strong oxidizers.

10.6. Hazardous decomposition products

May include, and are not limited to: oxides of carbon.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified.

Winter Treat Plus	
LD50 oral rat	> 2000 mg/kg
LD50 dermal rat	> 2000 mg/kg
LC50 inhalation rat	Not available.
Distillates, petroleum, hydrotreated middle (64742-46-7)	
LD50 oral rat	> 5000 mg/kg
LD50 dermal rabbit	> 2000 mg/kg
LC50 inhalation rat	4.6 mg/l/4h
Petroleum distillates, hydrotreated light (64742-47-8)	
LD50 oral rat	> 5000 mg/kg
LD50 dermal rabbit	> 2000 mg/kg
LC50 inhalation rat	> 5.2 mg/l/4h
Solvent naphtha, petroleum, light aromatic (64742-95-6)	
LD50 oral rat	8400 mg/kg
LD50 dermal rabbit	> 2000 mg/kg
LC50 inhalation rat	3400 ppm/4h
Benzene, 1,2,4-trimethyl- (95-63-6)	
LD50 oral rat	3280 mg/kg
LD50 dermal rabbit	> 3160 mg/kg
LC50 inhalation rat	18 g/m ³ /4h
Solvent naphtha, petroleum, heavy aromatic (64742-94-5)	
LD50 oral rat	> 5000 mg/kg
LD50 dermal rabbit	> 2 ml/kg
LC50 inhalation rat	> 5.28 mg/l/4h
Fatty acid amine reaction product	
LD50 oral rat	> 3000 mg/kg
LD50 dermal rabbit	> 2000 mg/kg
Xylenes (o-, m-, p- isomers) (1330-20-7)	
LD50 oral rat	4300 mg/kg
LD50 dermal rabbit	1700 mg/kg
LC50 inhalation rat	5000 ppm/4h
1,3,5-Trimethylbenzene (108-67-8)	
LC50 inhalation rat	24 g/m ³ /4h
Nonane (111-84-2)	
LC50 inhalation rat	3200 ppm/4h
Naphthalene (91-20-3)	
LD50 oral rat	490 mg/kg
LD50 dermal rabbit	>20 g/kg
Ethylbenzene (100-41-4)	
LD50 oral rat	3500 mg/kg
LD50 dermal rabbit	15400 mg/kg

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according to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012

Ethylbenzene (100-41-4)	
LC50 inhalation rat	17.2 mg/l/4h

Cumene (98-82-8)	
LD50 dermal rabbit	12300 µL/kg
LC50 inhalation rat	>3577 ppm/6h

Skin corrosion/irritation	: Causes skin irritation.
Serious eye damage/irritation	: Causes serious eye irritation.
Respiratory or skin sensitisation	: Based on available data, the classification criteria are not met.
Germ cell mutagenicity	: Based on available data, the classification criteria are not met.
Carcinogenicity	: Suspected of causing cancer.

Xylenes (o-, m-, p- isomers) (1330-20-7)	
IARC group	3 - Not classifiable

Naphthalene (91-20-3)	
IARC group	2B - Possibly carcinogenic to humans
National Toxicology Program (NTP) Status	1 - Evidence of Carcinogenicity, 3 - Reasonably anticipated to be Human Carcinogen

Ethylbenzene (100-41-4)	
IARC group	2B - Possibly carcinogenic to humans
National Toxicology Program (NTP) Status	1 - Evidence of Carcinogenicity

Cumene (98-82-8)	
IARC group	2B - Possibly carcinogenic to humans
National Toxicology Program (NTP) Status	1 - Evidence of Carcinogenicity, 3 - Reasonably anticipated to be Human Carcinogen

Reproductive toxicity	: Based on available data, the classification criteria are not met.
Specific target organ toxicity (single exposure)	: Based on available data, the classification criteria are not met.
Specific target organ toxicity (repeated exposure)	: Causes damage to organs through prolonged or repeated exposure.
Aspiration hazard	: May be fatal if swallowed and enters airways.
Symptoms/injuries after inhalation	: May cause respiratory tract irritation. Vapours may cause drowsiness and dizziness.
Symptoms/injuries after skin contact	: Causes skin irritation. Symptoms may include redness, edema, drying, defatting and cracking of the skin.
Symptoms/injuries after eye contact	: Causes serious eye irritation; Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.
Symptoms/injuries after ingestion	: May be fatal if swallowed and enters airways. This product may be aspirated into the lungs and cause chemical pneumonitis. May cause stomach distress, nausea or vomiting.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: May cause long-term adverse effects in the aquatic environment.
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12.2. Persistence and degradability

Winter Treat Plus	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

Winter Treat Plus	
Bioaccumulative potential	Not established.

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on the global warming	: No known ecological damage caused by this product.
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SECTION 13: Disposal considerations

13.1. Waste treatment methods

Additional information	: Handle empty containers with care because residual vapours are flammable.
------------------------	---

Winter Treat Plus

Safety Data Sheet

according to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

UN-No.(DOT) : UN1268
Proper Shipping Name (DOT) : Petroleum distillates, n.o.s.
Transport hazard class(es) (DOT) : 3
Hazard labels (DOT) :



Packing group (DOT) : III

Additional information

Other information : No supplementary information available.
Special transport precautions : Do not handle until all safety precautions have been read and understood.

SECTION 15: Regulatory information

15.1. US Federal regulations

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory.

Benzene, 1,2,4-trimethyl- (95-63-6)

Listed on United States SARA Section 313

SARA Section 313 - Emission Reporting 1.0 %

Nonane (111-84-2)

EPA TSCA Regulatory Flag T - T - indicates a substance that is the subject of a Section 4 test rule under TSCA.

Xylenes (o-, m-, p- isomers) (1330-20-7)

Listed on United States SARA Section 313

SARA Section 313 - Emission Reporting 1.0 %

Naphthalene (91-20-3)

Listed on United States SARA Section 313

EPA TSCA Regulatory Flag T - T - indicates a substance that is the subject of a Section 4 test rule under TSCA.

SARA Section 313 - Emission Reporting 0.1 %

Ethylbenzene (100-41-4)

Listed on United States SARA Section 313

SARA Section 313 - Emission Reporting 0.1 %

15.2. US State regulations

Winter Treat Plus

State or local regulations This product contains chemicals known to the State of California to cause cancer.

SECTION 16: Other information

Date of issue : 06/01/2015
Other information : None.

Disclaimer: We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind. The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for the user's own particular use.

SAFETY DATA SHEET

DEXRON GEAR OIL 75W-90

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SECTION 1. IDENTIFICATION

Product name : DEXRON GEAR OIL 75W-90
Product code : DEX75IBC, DEX75DRM, DEX75, DEX75BLK

Manufacturer or supplier's details
Petro-Canada Lubricants Inc.
2310 Lakeshore Road West
Mississauga ON L5J 1K2
Canada

Emergency telephone number
Petro-Canada Lubricants Inc.: +1 905-403-5770;
CHEMTREC Transport Emergency: 1-800-424-9300;
Poison Control Centre: Consult local telephone directory for
emergency number(s).

Recommended use of the chemical and restrictions on use

Recommended use : A rear axle and differential lubricant for light duty vehicles.
Meets General Motors specification 9986285.

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

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	viscous liquid
Colour	dark yellow
Odour	Mild petroleum oil like or no odour.

GHS Classification

Not a hazardous substance or mixture.

GHS label elements

Not a hazardous substance or mixture.

Potential Health Effects

Primary Routes of Entry : Eye contact
Ingestion
Inhalation
Skin contact

Aggravated Medical Condition : None known.

Other hazards

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None known.

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 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 %
1-Decene, homopolymer, hydrogenated	68037-01-4	30 - 50 %
Methacrylate copolymers		1 - 5 %
Petroleum oil		1 - 5 %
Alkyl phosphate		1 - 5 %
Long-chain alkyl amine with substituted heteromonocyclic		1 - 5 %
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 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.

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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 fire-fighting : 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.

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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

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 (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

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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.
- 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 : dark yellow
- Odour : Mild petroleum oil like or no odour.
- Odour Threshold : No data available
- pH : No data available
- Pour point : < -57 °C (< -71 °F)
- Boiling point/boiling range : No data available
- Flash point : 187 °C (369 °F)
Method: Cleveland open cup
- Fire Point : 225 °C (437 °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 : 0.8567 kg/l (15 °C / 59 °F)
- Solubility(ies)
- Water solubility : insoluble
- Partition coefficient: n-octanol/water : No data available
- Viscosity

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Viscosity, kinematic	: 88.5 cSt (40 °C / 104 °F)
	15.2 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 CO _x , PO _x , SO _x , NO _x , 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,

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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

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

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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 Regulations

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.

National Regulations

TDG

Not regulated as a dangerous good

SECTION 15. REGULATORY INFORMATION

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

This product contains one or several components that are not on the Canadian DSL nor NDSL lists.

TSCA

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

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SECTION 16. OTHER INFORMATION

For Copy of SDS : Internet: lubricants.petro-canada.com/sds
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

Revision Date : 2017/01/27

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.



Revision Number: 009.3

Issue date: 04/26/2017

1. PRODUCT AND COMPANY IDENTIFICATION

Product name:	LOCTITE 271 HS TL known as LOC 6ML 271RED TLOCKER H 12PG	IDH number:	209741
Product type:	Anaerobic Sealant	Item number:	27100
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

WARNING: CAUSES SKIN IRRITATION.
MAY CAUSE AN ALLERGIC SKIN REACTION.
CAUSES SERIOUS EYE IRRITATION.

HAZARD CLASS	HAZARD CATEGORY
SKIN IRRITATION	2
EYE IRRITATION	2A
SKIN SENSITIZATION	1

PICTOGRAM(S)



Precautionary Statements

Prevention:	Avoid breathing vapors, mist, or spray. Wash affected area thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves, eye protection, and face protection.
Response:	IF ON SKIN: Wash with plenty of water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If skin irritation or rash occurs: Get medical attention. If eye irritation persists: 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*
Polyglycol dimethacrylate	25852-47-5	60 - 70
Saccharin	81-07-2	1 - 5
Cumene hydroperoxide	80-15-9	1 - 5
Cumene	98-82-8	0.1 - 1

* Exact percentages may vary or are 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. Keep container closed. 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.

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
Polyglycol dimethacrylate	None	None	None	None
Saccharin	None	None	None	None
Cumene hydroperoxide	None	None	1 ppm (6 mg/m3) TWA (SKIN)	None
Cumene	50 ppm TWA	50 ppm (245 mg/m3) PEL (SKIN)	None	None

- Engineering controls:** Provide adequate local exhaust ventilation to maintain worker exposure below 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. 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. Butyl rubber gloves. Natural rubber gloves. Neoprene gloves.

9. PHYSICAL AND CHEMICAL PROPERTIES

- Physical state:** Liquid
- Color:** Red
- Odor:** Mild
- Odor threshold:** Not available.
- pH:** Not applicable
- Vapor pressure:** < 5 mm hg (26.7 °C (80.1 °F))
- Boiling point/range:** > 148.9 °C (> 300°F)
- Melting point/ range:** Not available.
- Specific gravity:** 1.1
- Vapor density:** Not available.
- Flash point:** > 93.3 °C (> 199.94 °F) Tagliabue closed cup
- Flammable/Explosive limits - lower:** Not available.
- Flammable/Explosive limits - upper:** Not available.
- Autoignition temperature:** Not available.
- Flammability:** Not applicable
- Evaporation rate:** Not available.
- Solubility in water:** Slight
- Partition coefficient (n-octanol/water):** Not available.
- VOC content:** 0.82 %; 7.81 g/l
- Viscosity:** Not available.
- Decomposition temperature:** Not available.

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions of storage and use.
Hazardous reactions:	None under normal processing. Polymerization may occur at elevated temperature or in the presence of incompatible materials.
Hazardous decomposition products:	Phenolics. Oxides of sulfur. Oxides of carbon. Oxides of nitrogen. Irritating organic vapours.
Incompatible materials:	Strong oxidizing agents. Strong acids. Copper. Iron. Strong reducing agents. Rust.
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 irritation.
Ingestion:	May cause gastrointestinal tract irritation if swallowed.

Hazardous Component(s)	LD50s and LC50s	Immediate and Delayed Health Effects
Polyglycol dimethacrylate	None	Allergen, Irritant
Saccharin	Oral LD50 (Mouse) = 17 g/kg	No Target Organs
Cumene hydroperoxide	Inhalation LC50 (Mouse, 4 h) = 200 mg/l	Allergen, Central nervous system, Corrosive, Irritant, Mutagen
Cumene	Oral LD50 (Rat) = 2.91 g/kg Oral LD50 (Rat) = 1,400 mg/kg Inhalation LC50 (Rat, 4 h) = 8000 ppm	Central nervous system, Irritant, Lung

Hazardous Component(s)	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Polyglycol dimethacrylate	No	No	No
Saccharin	No	No	No
Cumene hydroperoxide	No	No	No
Cumene	Reasonably Anticipated to be a Human Carcinogen.	Group 2B	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: RQ, Environmentally hazardous substance, liquid, n.o.s.
Hazard class or division: 9
Identification number: UN 3082
Packing group: III
DOT Hazardous Substance(s): alpha,alpha-Dimethylbenzylhydroperoxide

International Air Transportation (ICAO/IATA)

Proper shipping name: RQ, Environmentally hazardous substance, liquid, n.o.s.
Hazard class or division: 9
Identification number: UN 3082
Packing group: III

Water Transportation (IMO/IMDG)

Proper shipping name: RQ, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Hazard class or division: 9
Identification number: UN 3082
Packing group: III

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). Saccharin (CAS# 81-07-2). Cumene hydroperoxide (CAS# 80-15-9).
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.

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: Reviewed SDS. Reissued with new date. 3

Prepared by: Sheila Gines, Regulatory Affairs Specialist

Issue date: 04/26/2017

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MATERIAL SAFETY DATA SHEET

03702
07 00

DATE OF PREPARATION
May 4, 2015

SECTION 1 — PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NUMBER

03702

PRODUCT NAME

KRYLON® Industrial QUIK-MARK™ Solvent-Based Inverted Marking Paint (Fluorescent), Orange

MANUFACTURER'S NAME

THE SHERWIN-WILLIAMS COMPANY
KRYLON INDUSTRIAL PRODUCTS GROUP
Cleveland, OH 44115

Telephone Numbers and Websites

Product Information	(800) 247-3266 www.kpg-industrial.com
Regulatory Information	(216) 566-2902 www.paintdocs.com
Medical Emergency	(216) 566-2917
Transportation Emergency*	(800) 424-9300
<i>*for Chemical Emergency ONLY (spill, leak, fire, exposure, or accident)</i>	

SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

% by Weight	CAS Number	Ingredient	Units	Vapor Pressure
14	74-98-6	Propane		
		ACGIH TLV	1000 PPM	760 mm
		OSHA PEL	1000 PPM	
6	106-97-8	Butane		
		ACGIH TLV	1000 PPM	760 mm
		OSHA PEL	800 PPM	
8	110-54-3	Hexane		
		ACGIH TLV	50 PPM	127 mm
		OSHA PEL	50 PPM	
4	107-83-5	2-Methylpentane		
		ACGIH TLV	Not Available	211 mm
		OSHA PEL	Not Available	
1	96-14-0	3-Methylpentane		
		ACGIH TLV	500 PPM	211 mm
		OSHA PEL	Not Available	
1	79-29-8	2,3-Dimethylbutane		
		ACGIH TLV	Not Available	230 mm
		OSHA PEL	Not Available	
9	142-82-5	Heptane		
		ACGIH TLV	400 PPM	50 mm
		ACGIH TLV	500 PPM STEL	
		OSHA PEL	400 PPM	
		OSHA PEL	500 PPM STEL	
8	64742-89-8	Lt. Aliphatic Hydrocarbon Solvent		
		ACGIH TLV	300 PPM	12 mm
		OSHA PEL	300 PPM	
0.4	100-41-4	Ethylbenzene		
		ACGIH TLV	20 PPM	7.1 mm
		OSHA PEL	100 PPM	
		OSHA PEL	125 PPM STEL	
2	1330-20-7	Xylene		
		ACGIH TLV	100 PPM	5.9 mm
		ACGIH TLV	150 PPM STEL	
		OSHA PEL	100 PPM	
		OSHA PEL	150 PPM STEL	
0.3	14808-60-7	Quartz		
		ACGIH TLV	0.025 mg/m ³ as Resp. Dust	
		OSHA PEL	0.1 mg/m ³ as Resp. Dust	
27	1317-65-3	Calcium Carbonate		
		ACGIH TLV	10 mg/m ³ as Dust	
		OSHA PEL	10 mg/m ³ Total Dust	
		OSHA PEL	5 mg/m ³ Respirable Fraction	

SECTION 3 — HAZARDS IDENTIFICATION

ROUTES OF EXPOSURE

INHALATION of vapor or spray mist.
EYE or SKIN contact with the product, vapor or spray mist.

EFFECTS OF OVEREXPOSURE

EYES: Irritation.
SKIN: Prolonged or repeated exposure may cause irritation.
INHALATION: Irritation of the upper respiratory system.

May cause nervous system depression. Extreme overexposure may result in unconsciousness and possibly death.
Prolonged overexposure to hazardous ingredients in Section 2 may cause adverse chronic effects to the following organs or systems:

- the liver
- the urinary system
- the reproductive system

SIGNS AND SYMPTOMS OF OVEREXPOSURE

Headache, dizziness, nausea, and loss of coordination are indications of excessive exposure to vapors or spray mists.
Redness and itching or burning sensation may indicate eye or excessive skin exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

None generally recognized.

CANCER INFORMATION

For complete discussion of toxicology data refer to Section 11.

HMIS Codes

Health	2*
Flammability	3
Reactivity	0

SECTION 4 — FIRST AID MEASURES

EYES: Flush eyes with large amounts of water for 15 minutes. Get medical attention.

SKIN: Wash affected area thoroughly with soap and water.
Remove contaminated clothing and launder before re-use.

INHALATION: If affected, remove from exposure. Restore breathing. Keep warm and quiet.

INGESTION: Do not induce vomiting. Get medical attention immediately.

SECTION 5 — FIRE FIGHTING MEASURES

FLASH POINT	LEL	UEL
Propellant < 0 °F	0.9	9.5

EXTINGUISHING MEDIA

Carbon Dioxide, Dry Chemical, Foam

UNUSUAL FIRE AND EXPLOSION HAZARDS

Containers may explode when exposed to extreme heat.

Application to hot surfaces requires special precautions.

During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

SPECIAL FIRE FIGHTING PROCEDURES

Full protective equipment including self-contained breathing apparatus should be used.

Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

SECTION 6 — ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Remove all sources of ignition. Ventilate the area.

Remove with inert absorbent.

SECTION 7 — HANDLING AND STORAGE

STORAGE CATEGORY

Not Available

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Keep away from heat, sparks, and open flame. Vapors will accumulate readily and may ignite explosively.

During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish all flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition.

Consult NFPA Code. Use approved Bonding and Grounding procedures.

Contents under pressure. Do not puncture, incinerate, or expose to temperature above 120F. Heat from sunlight, radiators, stoves, hot water, and other heat sources could cause container to burst. Do not take internally. Keep out of the reach of children.

SECTION 8 — EXPOSURE CONTROLS/PERSONAL PROTECTION

PRECAUTIONS TO BE TAKEN IN USE

Use only with adequate ventilation.

Avoid contact with skin and eyes. Avoid breathing vapor and spray mist.

Wash hands after using.

This coating may contain materials classified as nuisance particulates (listed "as Dust" in Section 2) which may be present at hazardous levels only during sanding or abrading of the dried film. If no specific dusts are listed in Section 2, the applicable limits for nuisance dusts are ACGIH TLV 10 mg/m³ (total dust), 3 mg/m³ (respirable fraction), OSHA PEL 15 mg/m³ (total dust), 5 mg/m³ (respirable fraction).

VENTILATION

Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section 2 is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

RESPIRATORY PROTECTION

If personal exposure cannot be controlled below applicable limits by ventilation, wear a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section 2.

When sanding or abrading the dried film, wear a dust/mist respirator approved by NIOSH/MSHA for dust which may be generated from this product, underlying paint, or the abrasive.

PROTECTIVE GLOVES

None required for normal application of aerosol products where minimal skin contact is expected. For long or repeated contact, wear chemical resistant gloves.

EYE PROTECTION

Wear safety spectacles with unperforated sideshields.

OTHER PRECAUTIONS

Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

PRODUCT WEIGHT	7.37 lb/gal	883 g/l
SPECIFIC GRAVITY	0.89	
BOILING POINT	<0 - 325 °F	<-18 - 162 °C
MELTING POINT	Not Available	
VOLATILE VOLUME	78%	
EVAPORATION RATE	Faster than ether	
VAPOR DENSITY	Heavier than air	
SOLUBILITY IN WATER	Not Available	
pH	> 2.0, < 11.5	
VOLATILE ORGANIC COMPOUNDS (VOC Theoretical - As Packaged)	Less Water and Federally Exempt Solvents	
Volatile Weight 56.25%		

SECTION 10 — STABILITY AND REACTIVITY

STABILITY — Stable

CONDITIONS TO AVOID

None known.

INCOMPATIBILITY

None known.

HAZARDOUS DECOMPOSITION PRODUCTS

By fire: Carbon Dioxide, Carbon Monoxide

HAZARDOUS POLYMERIZATION

Will not occur

SECTION 11 — TOXICOLOGICAL INFORMATION

CHRONIC HEALTH HAZARDS

Prolonged and repeated exposure to Hexane may cause damage to nerve tissue of the arms and legs (peripheral neuropathy), resulting in muscular weakness and loss of sensation. This effect may be increased by the presence of Methyl Ethyl Ketone.

Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

Ethylbenzene is classified by IARC as possibly carcinogenic to humans (2B) based on inadequate evidence in humans and sufficient evidence in laboratory animals. Lifetime inhalation exposure of rats and mice to high ethylbenzene concentrations resulted in increases in certain types of cancer, including kidney tumors in rats and lung and liver tumors in mice. These effects were not observed in animals exposed to lower concentrations. There is no evidence that ethylbenzene causes cancer in humans.

Crystalline Silica (Quartz, Cristobalite) is listed by IARC and NTP. Long term exposure to high levels of silica dust, which can occur only when sanding or abrading the dry film, may cause lung damage (silicosis) and possibly cancer.

TOXICOLOGY DATA

CAS No.	Ingredient Name			
74-98-6	Propane	LC50 RAT LD50 RAT	4HR	Not Available Not Available
106-97-8	Butane	LC50 RAT LD50 RAT	4HR	Not Available Not Available
110-54-3	Hexane	LC50 RAT LD50 RAT	4HR	Not Available 28700 mg/kg
107-83-5	2-Methylpentane	LC50 RAT LD50 RAT	4HR	Not Available Not Available
96-14-0	3-Methylpentane	LC50 RAT LD50 RAT	4HR	Not Available Not Available
79-29-8	2,3-Dimethylbutane	LC50 RAT LD50 RAT	4HR	Not Available Not Available
142-82-5	Heptane	LC50 RAT LD50 RAT	4HR	Not Available Not Available
64742-89-8	Lt. Aliphatic Hydrocarbon Solvent	LC50 RAT LD50 RAT	4HR	Not Available Not Available
100-41-4	Ethylbenzene	LC50 RAT LD50 RAT	4HR	Not Available 3500 mg/kg
1330-20-7	Xylene	LC50 RAT LD50 RAT	4HR	5000 ppm 4300 mg/kg
14808-60-7	Quartz	LC50 RAT LD50 RAT	4HR	Not Available Not Available
1317-65-3	Calcium Carbonate	LC50 RAT LD50 RAT	4HR	Not Available Not Available

SECTION 12 — ECOLOGICAL INFORMATION**ECOTOXICOLOGICAL INFORMATION**

No data available.

SECTION 13 — DISPOSAL CONSIDERATIONS**WASTE DISPOSAL METHOD**

Waste from this product may be hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261.

Waste must be tested for ignitability to determine the applicable EPA hazardous waste numbers.

Do not incinerate. Depressurize container. Dispose of in accordance with Federal, State/Provincial, and Local regulations regarding pollution.

SECTION 14 — TRANSPORT INFORMATION

Multi-modal shipping descriptions are provided for informational purposes and do not consider container sizes. The presence of a shipping description for a particular mode of transport (ocean, air, etc.), does not indicate that the product is packaged suitably for that mode of transport. All packaging must be reviewed for suitability prior to shipment, and compliance with the applicable regulations is the sole responsibility of the person offering the product for transport.

US Ground (DOT)

May be classed as LTD. QTY. OR ORM-D

UN1950, AEROSOLS, 2.1, LIMITED QUANTITY, (ERG#126)

Canada (TDG)

May be classed as LTD. QTY. OR ORM-D

UN1950, AEROSOLS, CLASS 2.1, LIMITED QUANTITY, (ERG#126)

IMO

May be shipped as Limited Quantity

UN1950, AEROSOLS, CLASS 2.1, LIMITED QUANTITY, EmS F-D, S-U

IATA/ICAO

UN1950, AEROSOLS, FLAMMABLE, 2.1, LIMITED QUANTITY

SECTION 15 — REGULATORY INFORMATION

SARA 313 (40 CFR 372.65C) SUPPLIER NOTIFICATION

CAS No.	CHEMICAL/COMPOUND	% by WT	% Element
110-54-3	Hexane	8	
100-41-4	Ethylbenzene	0.3	
1330-20-7	Xylene	2	

CALIFORNIA PROPOSITION 65

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

TSCA CERTIFICATION

All chemicals in this product are listed, or are exempt from listing, on the TSCA Inventory.

SECTION 16 — OTHER INFORMATION

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

The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.

SECTION 1: Identification

1.1. Product identifier

Product form : Substance
Name : Oxygen
CAS No : 7782-44-7
Formula : O₂
Other means of identification : Oxygen, Compressed; Medipure® Oxygen; Aviator's Breathing Oxygen; USP Oxygen; Oxygen - Diving Grade; Dioxygen
Product group : Core Products

1.2. Recommended use and restrictions on use

Recommended uses and restrictions : Medical applications
Industrial use
Diving Gas (Underwater Breathing)

1.3. Supplier

Praxair Canada inc.
1200 – 1 City Centre Drive
Mississauga - Canada L5B 1M2
T 1-905-803-1600 - F 1-905-803-1682
www.praxair.ca

1.4. Emergency telephone number

Emergency number : 1-800-363-0042
Call emergency number 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.

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

GHS-CA classification

Ox. Gas 1 H270
Compressed gas H280

2.2. GHS Label elements, including precautionary statements

GHS-CA labelling

Hazard pictograms :



Signal word : DANGER

Hazard statements : MAY CAUSE OR INTENSIFY FIRE; OXIDIZER
CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED

Precautionary statements : Do not handle until all safety precautions have been read and understood
Keep away from clothing and other combustible materials
Keep valves and fittings free from oil and grease
In case of fire: Stop leak if safe to do so
Use and store only outdoors or in a well-ventilated area
Protect from sunlight when ambient temperature exceeds 52°C (125°F)
Use a back flow preventive device in the piping
Use only with equipment of compatible materials of construction and rated for cylinder pressure



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DO NOT change or force fit connections
Avoid spills. Do not walk on or roll equipment over spills
Use only with equipment cleaned for oxygen service
Open valve slowly
Close valve after each use and when empty

2.3. Other hazards

Other hazards not contributing to the classification

: Breathing 80 percent 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 central nervous system (CNS) effects, resulting in dizziness, poor coordination, tingling sensation, visual and hearing disturbances, muscular twitching, unconsciousness, and convulsions. Breathing oxygen under pressure may cause prolongation of adaptation to darkness and reduced peripheral vision.

2.4. Unknown acute toxicity (GHS-CA)

No data available

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	CAS No.	% (Vol.)	Common Name (synonyms)
Oxygen (Main constituent)	(CAS No) 7782-44-7	> 99.5	

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Get medical advice/attention. Remove to fresh air and keep at rest in a position comfortable for breathing.
First-aid measures after skin contact : Adverse effects not expected from this product.
First-aid measures after eye contact : In case of eye irritation: Rinse immediately with plenty of water. Consult an ophthalmologist if irritation persists.
First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects (acute and delayed)

No additional information available

4.3. Immediate medical attention and special treatment, if necessary

Other medical advice or treatment : None.

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media

Suitable extinguishing media : Vigorously accelerates combustion. Use media appropriate for surrounding fire. Water (e.g, safety shower) is the preferred extinguishing media for clothing fires.

5.2. Unsuitable extinguishing media

No additional information available

5.3. Specific hazards arising from the hazardous product

Fire hazard : Oxidizing agent; vigorously accelerates combustion. Contact with flammable materials may cause fire or explosion.
Explosion hazard : CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED.
Reactivity : No additional information available.
Reactivity in case of fire : No reactivity hazard other than the effects described in sub-sections below.

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5.4. Special protective equipment and precautions for fire-fighters

- Firefighting instructions : High-pressure, oxidizing gas
- Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with their provincial and local fire code regulations.
- Protection during firefighting : Self-contained breathing apparatus.
- Special protective equipment for fire fighters : Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.
- Specific methods : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas containers to rupture. Cool endangered containers with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems
- Stop flow of product if safe to do so
- Use water spray or fog to knock down fire fumes if possible.
- Other information : Heat of fire can build pressure in container and cause it to rupture. Cylinders are equipped with a pressure relief device. (Exceptions may exist where authorized by TC.) No part of the container should be subjected to a temperature higher than 125°F (52°C). Smoking, flames, and electric sparks in the presence of enriched oxygen atmospheres are potential explosion hazards.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Ensure adequate air ventilation. Eliminate ignition sources. Evacuate area. Try to stop release. Monitor concentration of released product. Wear self-contained breathing apparatus when entering area unless atmosphere is proven to be safe. Stop leak if safe to do so.

6.2. Methods and materials for containment and cleaning up

6.3. Reference to other sections

For further information refer to section 8: Exposure controls/personal protection

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. 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. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.
- Safe use of the product : **The suitability of this product 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 and familiar with the physiological effects, methods employed, frequency and duration of use, hazards, side effects, and precautions to be taken.

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7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store only where temperature will not exceed 125°F (52°C). Post "No Smoking" or "Open Flames" signs in storage and use areas. There must be no sources of ignition. Separate packages and protect against potential fire and/or explosion damage following appropriate codes and requirements (e.g. NFPA 30, NFPA 55, NFPA 70, and/or NFPA 221 in the U.S.) or according to requirements determined by the Authority Having Jurisdiction (AHJ). Always secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand when the container is not in use. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods. For other precautions in using this product, see section 16

OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE: When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Appropriate engineering controls

Appropriate engineering controls : Avoid oxygen rich (>23.5%) atmospheres. Use a local exhaust system with sufficient flow velocity to maintain an adequate supply of air in the worker's breathing zone. Mechanical (general): General exhaust ventilation may be acceptable if it can maintain an adequate supply of air.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment : Safety glasses. Face shield. Gloves.



Hand protection : Wear work gloves when handling containers. Wear heavy rubber gloves where contact with product may occur.

Eye protection : Wear goggles when transfilling or breaking transfer connections. Select in accordance with the current CSA standard Z94.3, "Industrial Eye and Face Protection", and any provincial regulations, local bylaws or guidelines.

Respiratory 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. Select in accordance with provincial regulations, local bylaws or guidelines. Selection should be based on the current CSA standard Z94.4, "Selection, Care, and Use of Respirators." Respirators should also be approved by NIOSH and MSHA. For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).

Environmental exposure controls : **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.

Other information : **Other protection :** Safety shoes for general handling at customer sites. Metatarsal shoes and cuffless trousers for cylinder handling at packaging and filling plants. Select in accordance with the current CSA standard Z195, "Protective Foot Wear", and any provincial regulations, local bylaws or guidelines. For working with flammable and oxidizing materials, consider the use of flame resistant anti-static safety clothing.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Gas

Appearance : Colourless gas.

Molecular mass : 32 g/mol



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Colour	: Colourless.
Odour	: No odour warning properties.
Odour threshold	: No data available
pH	: Not applicable.
pH solution	: No data available
Relative evaporation rate (butylacetate=1)	: No data available
Relative evaporation rate (ether=1)	: Not applicable.
Melting point	: $\geq -219\text{ }^{\circ}\text{C}$ ($-362\text{ }^{\circ}\text{F}$)
Freezing point	: No data available
Boiling point	: $-183\text{ }^{\circ}\text{C}$ ($-297\text{ }^{\circ}\text{F}$)
Flash point	: Not applicable.
Critical temperature	: $-118.6\text{ }^{\circ}\text{C}$ ($-181.48\text{ }^{\circ}\text{F}$)
Auto-ignition temperature	: Not applicable.
Decomposition temperature	: No data available
Vapour pressure	: Not applicable.
Vapour pressure at 50 °C	: No data available
Critical pressure	: 50.4 bar (731.4 psia)
Relative vapour density at 20 °C	: 0.0827 lb/ft ³ (1.325 kg/m ³) absolute vapour density at 70°F/21.1°C, 1 atm
Relative density	: 1.1
Relative density of saturated gas/air mixture	: No data available
Density	: 1.4289 kg/m ³ (at 21.1 °C)
Relative gas density	: 1.1
Solubility	: Water: 39 mg/l
Log Pow	: Not applicable.
Log Kow	: Not applicable.
Viscosity, kinematic	: Not applicable.
Viscosity, dynamic	: Not applicable.
Viscosity, kinematic (calculated value) (40 °C)	: No data available
Explosive properties	: Not applicable.
Oxidizing properties	: Oxidizer.
Flammability (solid, gas)	: Non flammable Non flammable

9.2. Other information

Gas group	: Compressed gas
Additional information	: Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	: No additional information available.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: Violently oxidizes organic material.
Conditions to avoid	: None under recommended storage and handling conditions (see section 7).
Incompatible materials	: Keep equipment free from oil and grease. Consider the potential toxicity hazard due to the presence of chlorinated or fluorinated polymers in high pressure (> 30 bar) oxygen lines in case of combustion. May react violently with combustible materials. May react violently with reducing agents.
Hazardous decomposition products	: None.

SECTION 11: Toxicological information

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11.1. Information on toxicological effects

Acute toxicity (oral)	: Not classified
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Not classified
Skin corrosion/irritation	: Not classified pH: Not applicable.
Serious eye damage/irritation	: Not classified pH: Not applicable.
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : No ecological damage caused by this product.

12.2. Persistence and degradability

Oxygen (7782-44-7)	
Persistence and degradability	No ecological damage caused by this product.

12.3. Bioaccumulative potential

Oxygen (7782-44-7)	
Log Pow	Not applicable.
Log Kow	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.

12.4. Mobility in soil

Oxygen (7782-44-7)	
Mobility in soil	No data available.
Log Pow	Not applicable.
Log Kow	Not applicable.
Ecology - soil	No ecological damage caused by this product.

12.5. Other adverse effects

Effect on the ozone layer : None
Effect on global warming : No known effects from this product

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste disposal recommendations : Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

SECTION 14: Transport information

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Oxygen

Safety Data Sheet E-4638

according to the Hazardous Products Regulation (February 11, 2015)

Date of issue: 10-15-1979

Revision date: 08-03-2016

Supersedes: 10-15-2013

14.1. Basic shipping description

In accordance with TDG

TDG

UN-No. (TDG) : UN1072
TDG Primary Hazard Classes : 2.2 - Class 2.2 - Non-Flammable, Non-Toxic Gas.
TDG Subsidiary Classes : 5.1
Proper shipping name : OXYGEN, COMPRESSED

ERAP Index : 3 000
Explosive Limit and Limited Quantity Index : 0.125 L (0,125 L)
Passenger Carrying Road Vehicle or Passenger : 75 L
Carrying Railway Vehicle Index

14.3. Air and sea transport

IMDG

UN-No. (IMDG) : 1072
Proper Shipping Name (IMDG) : OXYGEN, COMPRESSED
Class (IMDG) : 2 - Gases
MFAG-No : 122

IATA

UN-No. (IATA) : 1072
Proper Shipping Name (IATA) : Oxygen, compressed
Class (IATA) : 2

SECTION 15: Regulatory information

15.1. National regulations

Oxygen (7782-44-7)

Listed on the Canadian DSL (Domestic Substances List)

15.2. International regulations

Oxygen (7782-44-7)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Listed on INSQ (Mexican national Inventory of Chemical Substances)

SECTION 16: Other information

Date of issue : 15/10/1979
Revision date : 03/08/2016
Supersedes : 15/10/2013

Indication of changes:

Training advice : Ensure operators understand the hazard of oxygen enrichment.

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Oxygen

Safety Data Sheet E-4638

according to the Hazardous Products Regulation (February 11, 2015)

Date of issue: 10-15-1979

Revision date: 08-03-2016

Supersedes: 10-15-2013

Other information

: Praxair asks users of this product to study this SDS and become aware of the 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 SDS 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

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 Safety Data Sheet. Since the use of this information and the conditions of use 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, SDSs are furnished on sale or delivery by Praxair Canada Inc, or the independent distributors and suppliers who package and sell our products. To obtain current SDSs for these products, contact your Praxair sales representative, local distributor, or supplier, or download from www.praxair.ca. If you have questions regarding Praxair SDSs, would like the document number and date of the latest SDS, or would like the names of the Praxair suppliers in your area, phone or write Praxair Canada Inc, (Phone: 1-888-257-5149; Address: Praxair Canada Inc, 1 City Centre Drive, Suite 1200, Mississauga, Ontario, L5B 1M2).

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NFPA health hazard

: 0 - Exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials.

NFPA fire hazard

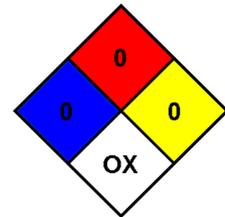
: 0 - Materials that will not burn.

NFPA reactivity

: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.

NFPA specific hazard

: OX - This denotes an oxidizer, a chemical which can greatly increase the rate of combustion/fire.



HMIS III Rating

Health

: 0 Minimal Hazard - No significant risk to health

Flammability

: 0 Minimal Hazard - Materials that will not burn

Physical

: 3 Serious Hazard - Materials that may form explosive mixtures with water and are capable of detonation or explosive reaction in the presence of a strong initiating source. Materials may polymerize, decompose, self-react, or undergo other chemical change at normal temperature and pressure with moderate risk of explosion

SDS Canada (GHS) - Praxair

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

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Power Steering Fluid

SECTION 1. IDENTIFICATION

Product Identifier	Power Steering Fluid
Other Means of Identification	15-881, 15-883, 15-888, 25-889, 35-870PRES, 35-871PRES, 35-874PRES, 35-881C, 35-881CQ, 35-881SO, 35-883AS, 35-883CQ, 35-883PC, 35-883SO, 15-881OEM
Recommended Use	Please refer to Product label.
Restrictions on Use	None known.
Manufacturer / Supplier	Recochem Inc., 850 Montee de Liesse, Montreal, QC, H4T 1P4, Compliance and Regulatory Department, 905-878-5544, www.recochem.com
Emergency Phone No.	CANUTEC, 613-996-6666, 24 Hours
SDS No.	01290029

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Skin corrosion/irritation - Category 2; Serious eye damage/eye irritation - Category 2B

GHS Label Elements



Signal Word:
Warning

Hazard Statement(s):

H315 Causes skin irritation.

H320 Causes eye irritation.

Precautionary Statement(s):

Prevention:

P264 Wash hands and skin thoroughly after handling.

P280 Wear protective gloves.

Response:

P302 + P352 IF ON SKIN: Wash with plenty of water.

P332 + P313 If skin irritation occurs: Get medical advice/attention.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337 + P313 If eye irritation persists: Get medical advice/attention.

P362 + P364 Take off contaminated clothing and wash it before reuse.

Storage:

Product Identifier: Power Steering Fluid

SDS No.: 01290029

Date of Preparation: October 29, 2015

Store in a well ventilated place. Keep cool. Keep container tightly closed. Store locked up.

Disposal:

Dispose of contents/container in accordance with applicable regional, national and local laws and regulations.

Other Hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture:

Chemical Name	CAS No.	%	Other Identifiers
Highly Refined Mineral Oils (Petroleum)		60-100	

Notes

The specific chemical identity and/or exact percentage of composition (concentration) has been withheld as a trade secret.

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Inhalation

Remove source of exposure or move to fresh air. Get medical advice/attention if you feel unwell or are concerned.

Skin Contact

Avoid direct contact. Wear chemical protective clothing if necessary. Take off contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Quickly and gently blot or brush away excess chemical. Immediately rinse with lukewarm, gently flowing water for 15-20 minutes. Get medical advice/attention if you feel unwell or are concerned. If skin irritation occurs get medical advice/attention. Clean clothing, shoes and leather goods. Injection of pressurized hydrocarbons can cause severe, permanent tissue damage. Initial symptoms may be minor. Injection of petroleum hydrocarbons requires immediate medical attention.

Eye Contact

Avoid direct contact. Wear chemical protective gloves if necessary. Quickly and gently blot or brush chemical off the face. Immediately rinse the contaminated eye(s) with lukewarm, gently flowing water for 15-20 minutes, while holding the eyelid(s) open. Remove contact lenses, if present and easy to do. Take care not to rinse contaminated water into the unaffected eye or onto the face. If eye irritation persists, get medical advice/attention.

Ingestion

Rinse mouth with water. Get medical advice/attention if you feel unwell or are concerned.

Most Important Symptoms and Effects, Acute and Delayed

No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Immediate Medical Attention and Special Treatment

Target Organs

Eyes, skin.

Special Instructions

No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Medical Conditions Aggravated by Exposure

Dermatitis.

SECTION 5. FIRE-FIGHTING MEASURES

Product Identifier: Power Steering Fluid

SDS No.: 01290029

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Date of Preparation: October 29, 2015

Extinguishing Media

Suitable Extinguishing Media

Not combustible. Use extinguishing agent suitable for surrounding fire.

Unsuitable Extinguishing Media

None known.

Specific Hazards Arising from the Chemical

Can ignite if strongly heated.

In a fire, the following hazardous materials may be generated: very toxic carbon monoxide, carbon dioxide.

Special Protective Equipment and Precautions for Fire-fighters

Review Section 6 (Accidental Release Measures) for important information on responding to leaks/spills.

See Skin Protection in Section 8 (Exposure Controls/Personal Protection) for advice on suitable chemical protective materials.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

Use the personal protective equipment recommended in Section 8 of this safety data sheet.

Environmental Precautions

Do not allow into any sewer, on the ground or into any waterway.

Methods and Materials for Containment and Cleaning Up

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). Use spark-proof tools and explosion-proof equipment. 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

Precautions for Safe 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. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Conditions for Safe Storage

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. Eliminate all ignition sources. 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 unlabeled containers. Use appropriate containment to avoid environmental contamination.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Not available.

Appropriate Engineering Controls

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General ventilation is usually adequate. For large scale use of this product: use local exhaust ventilation, if general ventilation is not adequate to control amount in the air. Provide eyewash in work area, if contact or splash hazard exists.

Individual Protection Measures

Eye/Face Protection

Wear chemical safety goggles.

Skin Protection

Not required, if used as directed.

Respiratory Protection

Not normally required if product is used as directed.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	Light amber.
Odour	Hydrocarbon
Odour Threshold	Not available
pH	Not applicable
Melting Point/Freezing Point	Not available (melting); Not available (freezing)
Initial Boiling Point/Range	Not available
Flash Point	188 °C (370 °F) (closed cup)
Evaporation Rate	Not available
Flammability (solid, gas)	Not applicable
Upper/Lower Flammability or Explosive Limit	Not available (upper); Not available (lower)
Vapour Pressure	< 0.08 mm Hg (0.01 kPa) at 20 °C
Vapour Density (air = 1)	> 1
Relative Density (water = 1)	0.88
Solubility	Practically insoluble in water; Not available (in other liquids)
Partition Coefficient, n-Octanol/Water (Log Kow)	Not available
Auto-ignition Temperature	Not available
Decomposition Temperature	Not available
Viscosity	46 centistokes at 25 °C (kinematic); Not available (dynamic)
Other Information	
Physical State	Liquid
Molecular Weight	Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity

None known.

Chemical Stability

Normally stable.

Possibility of Hazardous Reactions

None known.

Conditions to Avoid

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Prolonged exposure to high temperatures. Open flames, sparks, static discharge, heat and other ignition sources.
Temperatures above 188.0 °C (370.4 °F)

Incompatible Materials

Strong oxidizing agents (e.g. perchloric acid).

Hazardous Decomposition Products

Very toxic carbon monoxide, carbon dioxide; corrosive sulfur oxides; corrosive phosphorous oxides; corrosive, oxidizing nitrogen oxides.

SECTION 11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

Skin contact; eye contact.

Acute Toxicity

LC50: Not applicable.

LD50 (oral): Not applicable.

LD50 (dermal): Not applicable.

Skin Corrosion/Irritation

Human experience and animal tests show moderate or severe irritation.

Serious Eye Damage/Irritation

Human experience and animal tests show serious eye irritation.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

May be harmful based on limited evidence. As a mist nose and throat irritation.

Skin Absorption

No information was located.

Ingestion

May be harmful based on limited evidence. If large amounts are swallowed depression of the central nervous system. Symptoms may include headache, nausea, dizziness, drowsiness and confusion. A laxative effect if large amounts are swallowed. Symptoms may include nausea, vomiting, stomach cramps and diarrhea.

Aspiration Hazard

No information was located.

STOT (Specific Target Organ Toxicity) - Repeated Exposure

May cause If inhaled: irritation of the respiratory system. Respiratory tract injury has been observed.

May cause Following skin contact: dermatitis. Symptoms may include dry, red, cracked skin (dermatitis).

Respiratory and/or Skin Sensitization

Not known to be a respiratory sensitizer. Not known to be a skin sensitizer.

Carcinogenicity

Not known to cause cancer.

Reproductive Toxicity

Development of Offspring

No information was located.

Sexual Function and Fertility

No information was located.

Effects on or via Lactation

No information was located.

Germ Cell Mutagenicity

No information was located.

Interactive Effects

Product Identifier: Power Steering Fluid

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Date of Preparation: October 29, 2015

No information was located.

SECTION 12. ECOLOGICAL INFORMATION

Toxicity

No information was located.

Persistence and Degradability

No information was located.

Bioaccumulative Potential

No information was located.

Mobility in Soil

No information was located.

Other Adverse Effects

There is no information available.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

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

Not regulated under Canadian TDG Regulations. Not regulated under US DOT Regulations.

Environmental Hazards Not applicable

Special Precautions for User Not applicable

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code
Not applicable

SECTION 15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations

Canada

Domestic Substances List (DSL) / Non-Domestic Substances List (NDSL)

All ingredients are listed on the DSL/NDSL.

USA

Toxic Substances Control Act (TSCA) Section 8(b)

All ingredients are listed on the TSCA Inventory.

SECTION 16. OTHER INFORMATION

SDS Prepared By Compliance and Regulatory Department

Phone No. 905-878-5544

Date of Preparation October 29, 2015

Additional Information We are committed to uphold the Industry Consumer Ingredient Communication Voluntary

Product Identifier: Power Steering Fluid

SDS No.: 01290029

Date of Preparation: October 29, 2015

Initiative.

Please send us your request by visiting our website at www.recochem.com.

Ingredients present (intentionally added ingredients) at a concentration of greater than one percent (1%) shall be listed in descending order of predominance. Ingredients present at a concentration of not more than one percent shall be listed but may be disclosed without respect to order of predominance.

Disclaimer

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 Identifier: Power Steering Fluid
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SAFETY DATA SHEET

Revision Date 04-Sep-2015

Version 3

1. IDENTIFICATION

Product identifier

Product Name Spray Nine® 4L

Other means of identification

Product Code C26804

Synonyms None

Recommended use of the chemical and restrictions on use

Recommended Use Disinfectant Cleaner

Uses advised against No information available

Details of the supplier of the safety data sheet

Manufacturer Address

ITW Permatex
10 Columbus Blvd.
Hartford, CT 06106 USA

Distributor

ITW Permatex Canada
35 Brownridge Road, Unit 1
Halton Hills, ON Canada L7G 0C6
Telephone: (800) 924-6994

Company Phone Number 1-87-Permatex
(877) 376-2839

24 Hour Emergency Phone Number Chem-Tel: 800-255-3924
International Emergency:
00+1+ 813-248-0585
Contract Number: MIS0003453

E-mail address mail@permatex.com

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

NOTE: This product is a consumer product and is labeled in accordance with the US Consumer Product Safety Commission regulations which take precedence over OSHA Hazard Communication labeling. The actual container label will not include the label elements below. The labeling below applies to industrial/professional products.

Label elements

Emergency Overview

The product contains no substances which at their given concentration, are considered to be hazardous to health

Appearance Clear

Physical state Liquid

Odor Citrus

Precautionary Statements - Storage

Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Not applicable

Other Information

- Not applicable

3. COMPOSITION/INFORMATION ON INGREDIENTS**substance(s)**

Chemical Name	CAS No	Weight-%	Trade Secret
WATER	7732-18-5	60 - 100	*
ETHOXYLATED C9-C11 ALCOHOLS	68439-46-3	1 - 5	*
DIPROPYLENE GLYCOL MONONBUTYL ETHER	29911-28-2	1 - 5	*

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

4. FIRST AID MEASURES**Description of first aid measures**

General advice	Get medical advice/attention if you feel unwell.
Eye contact	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.
Skin contact	IF ON SKIN: Wash skin with soap and water. If skin irritation persists, call a physician. Wash contaminated clothing before reuse.
Inhalation	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If symptoms persist, call a physician.
Ingestion	IF SWALLOWED: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Call a physician.
Self-protection of the first aider	Use personal protective equipment as required. Avoid contact with skin, eyes or clothing.

Most important symptoms and effects, both acute and delayed

Symptoms See section 2 for more information.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES**Suitable extinguishing media**Carbon dioxide (CO₂), Dry chemical, Foam**Unsuitable extinguishing media**

None.

Specific hazards arising from the chemical

None in particular.

Explosion data

Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Avoid contact with eyes and skin.

Environmental precautions

Environmental precautions Do not flush into surface water or sanitary sewer system. See Section 12 for additional ecological information.

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 Ensure adequate ventilation. Soak up with inert absorbent material. Sweep up and shovel into suitable containers for disposal.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep from freezing.

Incompatible materials Strong oxidizing agents

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters**Exposure Guidelines**

NIOSH IDLH *Immediately Dangerous to Life or Health*

Other Information

Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Appropriate engineering controls

Engineering Controls Eyewash stations

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin and body protection Wear protective gloves and protective clothing.

Respiratory protection Use NIOSH-approved air-purifying respirator with organic vapor cartridge or canister, as

appropriate.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice. Regular cleaning of equipment, work area and clothing is recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Clear
Odor	Citrus
Odor threshold	No information available

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	No information available	
Melting point / freezing point	No information available	
Boiling point / boiling range	100 °C / 212 °F	
Flash point	> 93 °C / > 200 °F	Tag Closed Cup
Evaporation rate	< 1	Butyl acetate = 1
Flammability (solid, gas)	No information available	
Flammability Limit in Air		
Upper flammability limit:	No information available	
Lower flammability limit:	No information available	
Vapor pressure	18 mm Hg	
Vapor density	>1	Air = 1
Relative density	1.02 g/ml	
Water solubility	Soluble in water	
Solubility in other solvents	No information available	
Partition coefficient	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

Other Information

Softening point	No information available
Molecular weight	No information available
VOC Content (%)	<0.5%
Density	No information available
Bulk density	No information available

10. STABILITY AND REACTIVITY

Reactivity

No data available

Chemical stability

Stable under recommended storage conditions

Possibility of Hazardous Reactions

None under normal processing.

Conditions to avoid

Excessive heat.

Incompatible materials

Strong oxidizing agents

Hazardous Decomposition Products

Carbon oxides

11. TOXICOLOGICAL INFORMATION**Information on likely routes of exposure**

Inhalation	May cause irritation of respiratory tract.
Eye contact	Contact with eyes may cause irritation. May cause redness and tearing of the eyes.
Skin contact	May cause skin irritation and/or dermatitis.
Ingestion	Ingestion may cause irritation to mucous membranes.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
WATER 7732-18-5	> 90 mL/kg (Rat)	-	-
ETHOXYLATED C9-C11 ALCOHOLS 68439-46-3	= 1378 mg/kg (Rat) = 1400 mg/kg (Rat)	> 2 g/kg (Rabbit)	-
DIPROPYLENE GLYCOL MONONBUTYL ETHER 29911-28-2	= 1620 µL/kg (Rat)	= 5860 µL/kg (Rabbit)	= 42.1 ppm (Rat) 4 h

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.
Germ cell mutagenicity No information available.
Carcinogenicity No information available.

The following values are calculated based on chapter 3.1 of the GHS document .

ATEmix (oral) 39421 mg/kg
 ATEmix (dermal) 76980 mg/kg

12. ECOLOGICAL INFORMATION**Ecotoxicity**

3.17 % of the mixture consists of components(s) of unknown hazards to the aquatic environment

Chemical Name	Algae/aquatic plants	Fish	Crustacea
DIPROPYLENE GLYCOL MONONBUTYL ETHER 29911-28-2	-	841: 96 h Poecilia reticulata mg/L LC50 static	-

Persistence and degradability

No information available.

Bioaccumulation

No information available.

Mobility

No information available.

Other adverse effects

No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes	Disposal should be in accordance with applicable regional, national and local laws and regulations.
Contaminated packaging	Do not reuse container.
US EPA Waste Number	Not applicable

14. TRANSPORT INFORMATION

DOT

Proper shipping name: Not regulated

IATA

Proper shipping name: Not regulated

IMDG

Proper shipping name: Not regulated

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Not determined
ENCS	Not determined
IECSC	Complies
KECL	Not determined
PICCS	Not determined
AICS	Not determined

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

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

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

US State Regulations**California Proposition 65**

This product contains the following Proposition 65 chemicals

Chemical Name	California Proposition 65
ETHANOL - 64-17-5	Carcinogen Developmental

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
SODIUM HYDROXIDE 1310-73-2	X	X	X
ETHANOL 64-17-5	X	X	X

U.S. EPA Label Information

EPA Pesticide Registration Number 6659-3

EPA Statement

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals.

WHMIS Hazard Class

Non-controlled

NFPA	Health hazards 1	Flammability 1	Instability 0	-
HMIS	Health hazards 1	Flammability 1	Physical hazards 0	Personal protection B

NFPA (National Fire Protection Association)

HMIS (Hazardous Material Information System)

Revision Date 04-Sep-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.

End of Safety Data Sheet



SAFETY DATA SHEET

1. Identification

Product identifier Jump Start® Starting Fluid with Lubricity

Other means of identification

Product code 05671

Recommended use Starting fluid

Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information

Manufactured or sold by:

Company name CRC Industries, Inc.
Address 885 Louis Dr.
Warminster, PA 18974 US

Telephone

General Information 215-674-4300

Technical Assistance 800-521-3168

Customer Service 800-272-4620

24-Hour Emergency (CHEMTREC) 800-424-9300 (US)

703-527-3887 (International)

Website www.crcindustries.com

2. Hazard(s) identification

Physical hazards	Flammable aerosols	Category 1
	Gases under pressure	Compressed gas
Health hazards	Skin corrosion/irritation	Category 2
	Carcinogenicity	Category 2
	Specific target organ toxicity, single exposure	Category 3 narcotic effects
	Aspiration hazard	Category 1
Environmental hazards	Hazardous to the aquatic environment, long-term hazard	Category 3
OSHA defined hazards	Not classified.	

Label elements



Signal word Danger

Hazard statement Extremely flammable aerosol. Contains gas under pressure; may explode if heated. May be fatal if swallowed and enters airways. Causes skin irritation. May cause drowsiness or dizziness. Suspected of causing cancer. Harmful to aquatic life with long lasting effects.

Precautionary statement

Prevention Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not spray on an open flame or other ignition source. Do not apply while equipment is energized. Pressurized container: Do not pierce or burn, even after use. Extinguish all flames, pilot lights and heaters. Vapors will accumulate readily and may ignite. Use only with adequate ventilation; maintain ventilation during use and until all vapors are gone. Open doors and windows or use other means to ensure a fresh air supply during use and while product is drying. If you experience any symptoms listed on this label, increase ventilation or leave the area. Avoid breathing mist or vapor. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Avoid release to the environment.

Response	If swallowed: Immediately call a poison center/doctor. Do NOT induce vomiting. If on skin: Wash with plenty of water. If skin irritation occurs: Get medical attention. Take off contaminated clothing and wash before reuse. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. If exposed or concerned: Get medical attention.
Storage	Store in a well-ventilated place. Store locked up. Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F. Exposure to high temperature may cause can to burst.
Disposal	Dispose of contents/container in accordance with local/regional/national regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	22.5% of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Heptane, branched, cyclic and linear		426260-76-6	70 - 80
Diethyl Ether		60-29-7	10 - 20
Carbon Dioxide		124-38-9	5 - 10
Ethanol		64-17-5	< 1.5
Chloroethane		75-00-3	< 1
Distillates (petroleum), hydrotreated light		64742-47-8	< 1

Specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, give oxygen. Call a POISON CENTER or doctor/physician if you feel unwell.
Skin contact	Remove contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
Eye contact	Rinse with water. Get medical attention if irritation develops and persists.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Most important symptoms/effects, acute and delayed	May cause drowsiness and dizziness. Headache. Nausea, vomiting. Aspiration may cause pulmonary edema and pneumonitis. Skin irritation. May cause redness and pain.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	IF exposed or concerned: Get medical advice/attention. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media	Foam. Water spray. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	Contents under pressure. Pressurized container may rupture when exposed to heat or flame. During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.
Fire-fighting equipment/instructions	In case of fire: Stop leak if safe to do so. Move containers from fire area if you can do so without risk. Containers should be cooled with water to prevent vapor pressure build up.
General fire hazards	Extremely flammable aerosol. Contents under pressure. Pressurized container may rupture when exposed to heat or flame.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Keep out of low areas. Many vapors are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks). Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist or vapor. Emergency personnel need self-contained breathing equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Keep combustibles (wood, paper, oil, etc.) away from spilled material. This product is miscible in water. Stop the flow of material, if this is without risk. Prevent product from entering drains. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. For waste disposal, see section 13 of the SDS.

Environmental precautions

Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground. Inform appropriate managerial or supervisory personnel of all environmental releases.

7. Handling and storage

Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. 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. Use caution around energized equipment. The metal container will conduct electricity if it contacts a live source. This may result in injury to the user from electrical shock and/or flash fire. Avoid breathing mist or vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Should be handled in closed systems, if possible. Use only in well-ventilated areas. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices. Avoid release to the environment. For product usage instructions, please see the product label.

Conditions for safe storage, including any incompatibilities

Level 3 Aerosol.

Pressurized container. Protect from sunlight and do not expose to temperatures exceeding 50°C/122 °F. 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. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
Carbon Dioxide (CAS 124-38-9)	PEL	9000 mg/m3
Chloroethane (CAS 75-00-3)	PEL	5000 ppm 2600 mg/m3
Diethyl Ether (CAS 60-29-7)	PEL	1000 ppm 1200 mg/m3
Ethanol (CAS 64-17-5)	PEL	400 ppm 1900 mg/m3 1000 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
Carbon Dioxide (CAS 124-38-9)	STEL	30000 ppm
Chloroethane (CAS 75-00-3)	TWA	5000 ppm
Diethyl Ether (CAS 60-29-7)	TWA	100 ppm
Ethanol (CAS 64-17-5)	STEL	500 ppm
	TWA	400 ppm
	STEL	1000 ppm

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
Carbon Dioxide (CAS 124-38-9)	STEL	54000 mg/m3
		30000 ppm
	TWA	9000 mg/m3 5000 ppm
Distillates (petroleum), hydrotreated light (CAS 64742-47-8)	TWA	100 mg/m3
Ethanol (CAS 64-17-5)	TWA	1900 mg/m3
		1000 ppm

Biological limit values No biological exposure limits noted for the ingredient(s).

Exposure guidelines**US - California OELs: Skin designation**

Chloroethane (CAS 75-00-3) Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

Chloroethane (CAS 75-00-3) Can be absorbed through the skin.

Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection Wear safety glasses with side shields (or goggles).

Skin protection

Hand protection Wear protective gloves such as: Nitrile. Butyl rubber.

Other Wear appropriate chemical resistant clothing.

Respiratory protection

If engineering controls are not feasible or if exposure exceeds the applicable exposure limits, use a NIOSH-approved cartridge respirator with an organic vapor cartridge. Use a self-contained breathing apparatus in confined spaces and for emergencies. Air monitoring is needed to determine actual employee exposure levels.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

When using do not smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties**Appearance**

Physical state Liquid.

Form Aerosol.

Color Colorless.

Odor Hydrocarbon-like.

Odor threshold Not available.

pH Not available.

Melting point/freezing point -189.9 °F (-123.3 °C) estimated

Initial boiling point and boiling range 94.3 °F (34.6 °C) estimated

Flash point < 20 °F (< -6.7 °C) Tag Closed Cup

Evaporation rate Fast.

Flammability (solid, gas) Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) 0.5 % estimated

Flammability limit - upper (%) 36.5 % estimated

Vapor pressure	5024.7 hPa estimated
Vapor density	> 1 (air = 1)
Relative density	0.7
Solubility (water)	Slightly soluble.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	320 °F (160 °C) estimated
Decomposition temperature	Not available.
Viscosity (kinematic)	< 20 cSt (104 °F (40 °C))
Percent volatile	100 %

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Avoid heat, sparks, open flames and other ignition sources. Direct sunlight. Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents. Amines. Nitric acids.
Hazardous decomposition products	Carbon oxides. Acrid smoke.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause drowsiness and dizziness. Headache. Nausea, vomiting. Prolonged inhalation may be harmful.
Skin contact	Causes skin irritation.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	Droplets of the product aspirated into the lungs through ingestion or vomiting may cause a serious chemical pneumonia.

Symptoms related to the physical, chemical and toxicological characteristics Headache. May cause drowsiness and dizziness. Nausea, vomiting. Aspiration may cause pulmonary edema and pneumonitis. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity May be fatal if swallowed and enters airways. Narcotic effects.

Product	Species	Test Results
Jump Start® Starting Fluid with Lubricity		
Acute		
Dermal		
LD50	Rabbit	2667 mg/kg estimated
Inhalation		
LC0	Rat	15588 mg/l, 4 hours estimated
LC50	Rat	74 mg/l, 4 hours estimated
Oral		
LD50	Rat	5032 mg/kg estimated

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation	Causes skin irritation. Repeated exposure may cause skin dryness or cracking.
Serious eye damage/eye irritation	Direct contact with eyes may cause temporary irritation.
Respiratory sensitization	Not a respiratory sensitizer.
Skin sensitization	This product is not expected to cause skin sensitization.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity Suspected of causing cancer.

ACGIH Carcinogens

Chloroethane (CAS 75-00-3)

Confirmed animal carcinogen with unknown relevance to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Chloroethane (CAS 75-00-3)

3 Not classifiable as to carcinogenicity to humans.

Diethyl Ether (CAS 60-29-7)

3 Not classifiable as to carcinogenicity to humans.

US. National Toxicology Program (NTP) Report on Carcinogens

Not available.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure May cause drowsiness and dizziness.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard May be fatal if swallowed and enters airways. If aspirated into lungs during swallowing or vomiting, may cause chemical pneumonia, pulmonary injury or death.

Chronic effects Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity Harmful to aquatic life with long lasting effects.

Product	Species	Test Results
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Jump Start® Starting Fluid with Lubricity

Aquatic

Fish	LC50	Fish	49850.1406 mg/l, 96 hours estimated
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Acute

Crustacea	EC50	Daphnia	1181.25 mg/l, 48 hours estimated
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Components

Species

Test Results

Diethyl Ether (CAS 60-29-7)

Aquatic

Fish	LC50	Fathead minnow (Pimephales promelas)	2560 mg/l, 96 hours
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Distillates (petroleum), hydrotreated light (CAS 64742-47-8)

Aquatic

Acute

Fish	LC50	Fathead minnow (Pimephales promelas)	45 mg/l, 96 hours
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Ethanol (CAS 64-17-5)

Aquatic

Acute

Algae	EC50	Green algae (Chlorella kessleri)	1450 mg/l
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Crustacea	EC50	Water flea (Daphnia magna)	11.2 mg/l, 48 hours 7.7 - 11.2 mg/l, 48 hours
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Fish	LC50	Fathead minnow (Pimephales promelas)	15300 mg/l, 96 hours
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> 100 mg/l, 96 hours

> 100 mg/l, 96 hours

Rainbow trout, donaldson trout (Oncorhynchus mykiss)	13000 - 15300 mg/l, 96 hours
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* Estimates for product may be based on additional component data not shown.

Persistence and degradability No data is available on the degradability of this product.

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)

Chloroethane	1.43
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Diethyl Ether	0.89
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Ethanol	-0.31
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Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal of waste from residues / unused products If discarded, this product is considered a RCRA ignitable waste, D001. 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. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose in accordance with all applicable regulations.

Hazardous waste code D001: Waste Flammable material with a flash point <140 F

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number UN1950
UN proper shipping name Aerosols, flammable, n.o.s. (engine starting fluid), Limited Quantity
Transport hazard class(es)
Class 2.1
Subsidiary risk -
Label(s) 2.1
Packing group Not applicable.
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
Special provisions N82
Packaging exceptions 306
Packaging non bulk 304
Packaging bulk None

IATA

UN number UN1950
UN proper shipping name Aerosols, flammable (engine starting fluid)
Transport hazard class(es)
Class 2.1
Subsidiary risk -
Packing group Not applicable.
Environmental hazards No.
ERG Code 10L
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.
Other information
Passenger and cargo aircraft Forbidden
Cargo aircraft only Allowed.

IMDG

UN number UN1950
UN proper shipping name AEROSOLS, LIMITED QUANTITY
Transport hazard class(es)
Class 2
Subsidiary risk -
Packing group Not applicable.
Environmental hazards
Marine pollutant No.
EmS F-D, S-U
Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

SARA 304 Emergency release notification

Not regulated.

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

Chloroethane (CAS 75-00-3)

CERCLA Hazardous Substance List (40 CFR 302.4)

Diethyl Ether (CAS 60-29-7) Listed.

CERCLA Hazardous Substances: Reportable quantity

Diethyl Ether (CAS 60-29-7) 100 LBS

Spills or releases resulting in the loss of any ingredient at or above its RQ require immediate notification to the National Response Center (800-424-8802) and to your Local Emergency Planning Committee.

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Chloroethane (CAS 75-00-3)

Diethyl Ether (CAS 60-29-7)

Safe Drinking Water Act (SDWA) Not regulated.**Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number**

Diethyl Ether (CAS 60-29-7) 6584

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Diethyl Ether (CAS 60-29-7) 35 %WV

DEA Exempt Chemical Mixtures Code Number

Diethyl Ether (CAS 60-29-7) 6584

Food and Drug Administration (FDA) Not regulated.**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

Section 311/312 Immediate Hazard - Yes
Hazard categories Delayed Hazard - Yes
 Fire Hazard - Yes
 Pressure Hazard - Yes
 Reactivity Hazard - No

SARA 302 Extremely hazardous substance No

US state regulations**US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))**

Chloroethane (CAS 75-00-3)

Distillates (petroleum), hydrotreated light (CAS 64742-47-8)

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. New Jersey Worker and Community Right-to-Know Act

Carbon Dioxide (CAS 124-38-9)

Diethyl Ether (CAS 60-29-7)

Ethanol (CAS 64-17-5)

US. Massachusetts RTK - Substance List

Carbon Dioxide (CAS 124-38-9)

Diethyl Ether (CAS 60-29-7)

US. Pennsylvania Worker and Community Right-to-Know Law

Diethyl Ether (CAS 60-29-7)

Chloroethane (CAS 75-00-3)

Carbon Dioxide (CAS 124-38-9)

US. Rhode Island RTK

Diethyl Ether (CAS 60-29-7)

US. California Proposition 65

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

Chloroethane (CAS 75-00-3) Listed: July 1, 1990

US - California Proposition 65 - CRT: Listed date/Developmental toxin

Toluene (CAS 108-88-3) Listed: January 1, 1991

US - California Proposition 65 - CRT: Listed date/Female reproductive toxin

Toluene (CAS 108-88-3) Listed: August 7, 2009

Volatile organic compounds (VOC) regulations**EPA****VOC content (40 CFR 51.100(s))** 94.5 %**Consumer products (40 CFR 59, Subpt. C)** Not regulated**State****Consumer products** Not regulated**VOC content (CA)** 94.5 %**VOC content (OTC)** 94.5 %**International Inventories**

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply 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, including date of preparation or last revision

Issue date	07-24-2015
Revision date	08-13-2015
Prepared by	Allison Cho
Version #	02
Further information	Not available.
HMIS® ratings	Health: 1* Flammability: 4 Physical hazard: 0 Personal protection: B
NFPA ratings	Health: 1 Flammability: 4 Instability: 0
NFPA ratings	

Disclaimer

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. This information is accurate to the best of CRC Industries' knowledge or obtained from sources believed by CRC to be accurate. Before using any product, read all warnings and directions on the label. For further clarification of any information contained on this (M)SDS consult your supervisor, a health & safety professional, or CRC Industries.



Safety Data Sheet

1 - Identification

Trade Name: WD-40 Aerosol	Canadian Office: WD-40 Products [Canada] Ltd. P.O. Box 220 Toronto, Ontario M9C 4V3 Information Phone #: (416) 622-9881 Emergency Phone # 24 hr: Canutec: (613) 996-6666 - Designated for use only in the event of chemical emergencies involving a spill, leak, fire exposure or accident involving chemicals
Product Use: Lubricant, Penetrant, Drives Out Moisture, Removes and Protects Surfaces From Corrosion	
Restrictions on Use: None identified	
SDS Date Of Preparation: November 15, 2016	

2 – Hazards Identification

WHMIS 2015/GHS Classification:

Flammable Aerosol Category 1

Gas Under Pressure: Compressed Gas

Aspiration Toxicity Category 1

Specific Target Organ Toxicity Single Exposure Category 3 (nervous system effects)

Note: This product is a consumer product and is labeled in accordance with the Consumer Chemicals and Containers Regulations (CCCR) which take precedence over WHMIS 2015 labeling. The actual container label will not include the label elements below. The labeling below applies to industrial/professional products.

Label Elements:



DANGER!

Extremely flammable aerosol.

Contains gas under pressure; may explode if heated.

May be fatal if swallowed and enters airways.

May cause drowsiness or dizziness.

Prevention

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Do not spray on an open flame or other ignition source.

Do not pierce or burn, even after use.

Avoid breathing mist or vapors.

Use only outdoors or in a well-ventilated area.

Response

IF SWALLOWED: Immediately call a POISON CENTER or physician. Do NOT induce vomiting.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Call a POISON CENTER or doctor if you feel unwell.

Storage

Store locked up.

Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F. Store in a well-ventilated place.

Disposal

Dispose of contents and container in accordance with local and national regulations.

3 - Composition/Information on Ingredients

Ingredient	CAS #	Weight Percent	WHMIS 2015/ GHS Classification
Aliphatic Hydrocarbon	64742-47-8	50-70%	Flammable Liquid Category 3 Aspiration Toxicity Category 1 Specific Target Organ Toxicity Single Exposure Category 3 (nervous system effects)
Petroleum Base Oil	64742-56-9 64742-65-0 64742-53-6 64742-54-7 64742-71-8	30-35%	Not Hazardous
Carbon Dioxide	124-38-9	2-3%	Simple Asphyxiant

4 – First Aid Measures

Ingestion (Swallowed): Aspiration Hazard. DO NOT induce vomiting. Call physician, poison control center or the WD-40 Safety Hotline at 1-888-324-7596 immediately.

Eye Contact: Flush thoroughly with water. Remove contact lenses if present after the first 5 minutes and continue flushing for several more minutes. Get medical attention if irritation persists.

Skin Contact: Wash with soap and water. If irritation develops and persists, get medical attention.

Inhalation (Breathing): If irritation is experienced, move to fresh air. Get medical attention if irritation or other symptoms develop and persist.

Signs and Symptoms of Exposure: Harmful or fatal if swallowed. If swallowed, may be aspirated and cause lung damage. May cause eye irritation. Inhalation of mists or vapors may cause nasal and respiratory tract irritation and central nervous system effects such as headache, dizziness and nausea. Skin contact may cause drying of the skin.

Indication of Immediate Medical Attention/Special Treatment Needed: Immediate medical attention is needed for ingestion.

5 – Fire Fighting Measures

Suitable (and unsuitable) Extinguishing Media: Use water fog, dry chemical, carbon dioxide or foam. Do not use water jet or flooding amounts of water. Burning product will float on the surface and spread fire.

Specific Hazards Arising from the Chemical: Contents under pressure. Keep away from ignition sources and open flames. Exposure of containers to extreme heat and flames can cause them to rupture often with violent force. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back. Combustion will produce oxides of carbon and hydrocarbons.

Special Protective Equipment and Precautions for Fire-Fighters: Firefighters should always wear positive pressure self-contained breathing apparatus and full protective clothing. Cool fire-exposed containers with water. Use shielding to protect against bursting containers.

6 – Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures: Wear appropriate protective clothing (see Section 8). Eliminate all sources of ignition and ventilate area.

Methods and Materials for Containment/Cleanup: Leaking cans should be placed in a plastic bag or open pail until the pressure has dissipated. Contain and collect liquid with an inert absorbent and place in a container for disposal. Clean spill area thoroughly. Report spills to authorities as required.

7 – Handling and Storage

Precautions for Safe Handling: Avoid contact with eyes. Avoid prolonged contact with skin. Avoid breathing vapors or aerosols. Use only with adequate ventilation. Keep away from heat, sparks, pilot lights, hot surfaces and open flames. Unplug electrical tools, motors and appliances before spraying or bringing the can near any source of electricity. Electricity can burn a hole in the can and cause contents to burst into flames. To avoid

serious burn injury, do not let the can touch battery terminals, electrical connections on motors or appliances or any other source of electricity. Wash thoroughly with soap and water after handling. Keep containers closed when not in use. Keep out of the reach of children. Do not puncture, crush or incinerate containers, even when empty.

Conditions for Safe Storage: Store in a cool, well-ventilated area, away from incompatible materials Do not store above 120°F or in direct sunlight. U.F.C (NFPA 30B) Level 3 Aerosol. Store away from oxidizers.

8 – Exposure Controls/Personal Protection

Chemical	Occupational Exposure limits
Aliphatic Hydrocarbon	1200 mg/m ³ TWA (manufacturer recommended)
Petroleum Base Oil	5 mg/m ³ TWA (Inhalable) ACGIH TLV (as mineral oil) 5 mg/m ³ TWA, 10 mg/m ³ STEL Canada- Québec (as oil mist, mineral) 5 mg/m ³ TWA, 10 mg/m ³ STEL Canada- Ontario (as oil mist, mineral) 1 mg/m ³ TWA British Columbia (as Oil mist-mineral, severely refined)
Carbon Dioxide	5000 ppm TWA, 30000 ppm STEL ACGIH TLV 5000 ppm TWA, 30000 ppm STEL Canada- Ontario 5000 ppm TWA, 30000 ppm STEL Canada- Québec 5000 ppm TWA. 15000 ppm STEL British Columbia

The Following Controls are Recommended for Normal Consumer Use of this Product

Appropriate Engineering Controls: Use in a well-ventilated area.

Personal Protection:

Eye Protection: Avoid eye contact. Always spray away from your face.

Skin Protection: Avoid prolonged skin contact. Chemical resistant gloves recommended for operations where skin contact is likely.

Respiratory Protection: None needed for normal use with adequate ventilation.

For Bulk Processing or Workplace Use the Following Controls are Recommended

Appropriate Engineering Controls: Use adequate general and local exhaust ventilation to maintain exposure levels below that occupational exposure limits.

Personal Protection:

Eye Protection: Safety goggles recommended where eye contact is possible.

Skin Protection: Wear chemical resistant gloves.

Respiratory Protection: None required if ventilation is adequate. If the occupational exposure limits are exceeded, wear a NIOSH approved respirator. Respirator selection and use should be based on contaminant type, form and concentration. Follow applicable regulations and good Industrial Hygiene practice.

Work/Hygiene Practices: Wash with soap and water after handling.

9 – Physical and Chemical Properties

Appearance:	Light amber liquid	Flammable Limits: (Solvent Portion)	LEL: 0.6% UEL: 8%
Odor:	Mild petroleum odor	Vapor Pressure:	95-115 PSI @ 70°F
Odor Threshold:	Not established	Vapor Density:	Greater than 1 (air=1)
pH:	Not Applicable	Relative Density:	0.8 – 0.82 @ 60°F
Melting/Freezing Point:	Not established	Solubilities:	Insoluble in water
Boiling Point/Range:	361 - 369°F (183 - 187°C)	Partition Coefficient; n-octanol/water:	Not established
Flash Point:	122°F (49°C) Tag Open Cup (liquid)	Autoignition Temperature:	Not established
Evaporation Rate:	Not established	Decomposition Temperature:	Not established
Flammability (solid, gas):	Flammable Aerosol	Viscosity:	2.79-2.96 cSt @ 100°F
VOC:	65%	Pour Point:	-63°C (-81.4°F) ASTM D-97

10 – Stability and Reactivity

Reactivity: Not reactive under normal conditions

Chemical Stability: Stable

Possibility of Hazardous Reactions: May react with strong oxidizers generating heat.

Conditions to Avoid: Avoid heat, sparks, flames and other sources of ignition. Do not puncture or incinerate containers.

Incompatible Materials: Strong oxidizing agents.

Hazardous Decomposition Products: Carbon monoxide and carbon dioxide.

11 – Toxicological Information

Symptoms of Overexposure:

Inhalation: High concentrations may cause nasal and respiratory irritation and central nervous system effects such as headache, dizziness and nausea. Intentional abuse may be harmful or fatal.

Skin Contact: Prolonged and/or repeated contact may produce mild irritation and defatting with possible dermatitis.

Eye Contact: Contact may be irritating to eyes. May cause redness and tearing.

Ingestion: This product has low oral toxicity. Swallowing may cause gastrointestinal irritation, nausea, vomiting and diarrhea. This product is an aspiration hazard. If swallowed, can enter the lungs and may cause chemical pneumonitis, severe lung damage and death.

Chronic Effects: None expected.

Carcinogen Status: None of the components are listed as a carcinogen or suspect carcinogen by IARC, NTP, ACGIH or OSHA.

Reproductive Toxicity: None of the components is considered a reproductive hazard.

Numerical Measures of Toxicity:

Acute Toxicity Estimates: Oral > 5,000 mg/kg; Dermal >2,000 mg/kg based on an assessment of the ingredients. This product is not classified as toxic by established criteria. It is an aspiration hazard.

12 – Ecological Information

Ecotoxicity: No specific aquatic toxicity data is currently available; however components of this product are not expected to be harmful to aquatic organisms

Persistence and Degradability: Components are readily biodegradable.

Bioaccumulative Potential: Bioaccumulation is not expected based on an assessment of the ingredients.

Mobility in Soil: No data available

Other Adverse Effects: None known

13 - Disposal Considerations

Aerosol containers should not be punctured, compacted in home trash compactors or incinerated. Empty containers may be disposed of through normal waste management options. Dispose of all waste product, absorbents, and other materials in accordance with applicable Federal, state and local regulations.

14 – Transportation Information

DOT Surface Shipping Description: UN1950, Aerosols, 2.1 Ltd. Qty

(Note: Shipping Papers are not required for Limited Quantities unless transported by air or vessel – each package must be marked with the Limited Quantity Mark)

Canadian TDG Classification: Limited Quantity

IMDG Shipping Description: Un1950, Aerosols, 2.1, LTD QTY

ICAO Shipping Description: UN1950, Aerosols, flammable, 2.1

NOTE: WD-40 Company does not test aerosol cans to assure that they meet the pressure and other requirements for transport by air. We do not recommend that our aerosol products be transported by air.

15 – Regulatory Information

National Pollutant Release Inventory (NPRI): This product contains the following chemicals that are listed on the NPRI Substance List: Aliphatic Hydrocarbon (64742-47-8) 50-70%

Canadian Environmental Protection Act: All of the ingredients are listed on the Canadian Domestic Substances List or exempt from notification.

16 – Other Information

HMIS Hazard Rating:

Health – 1 (slight hazard), Fire Hazard – 4 (severe hazard), Physical Hazard – 0 (minimal hazard)

Revision Date: November 15, 2016

Supersedes: March 27, 2014

Prepared by: Industrial Health & Safety Consultants, Inc. Shelton, CT, USA

Reviewed by: I. Kowalski

Regulatory Affairs Dept.

1014100/No.0084103

WINDSHIELD WASH -45°C

SECTION 1. IDENTIFICATION

Product Identifier	WINDSHIELD WASH -45°C
Other Means of Identification	15-403SLV, 15-403SLV-PRO, 15-404, 15-408, 35-208SO, 35-306GP, 35-309OPW-1K, 35-404BMW, 35-404E, 35-404LIFE, 35-404MER, 35-404PC, 35-404REF, 35-404U/N, 35-404UFA, 35-408HUS, 35-408SL, 35-404CT
Recommended Use	Please refer to Product label.
Restrictions on Use	None known.
Manufacturer / Supplier	Recochem Inc., 850 Montee de Liesse, Montreal, QC, H4T 1P4, Compliance and Regulatory Department, 905-878-5544, www.recochem.com
Emergency Phone No.	CANUTEC, 613-996-6666, 24 Hours
SDS No.	1575

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquid - Category 3; Acute toxicity (Oral) - Category 3; Acute toxicity (Dermal) - Category 3; Acute toxicity (Inhalation) - Category 3; Specific target organ toxicity (single exposure) - Category 1

GHS Label Elements



Signal Word:
Danger

Hazard Statement(s):

H226	Flammable liquid and vapour.
H301	Toxic if swallowed.
H311	Toxic in contact with skin.
H331	Toxic if inhaled.
H370	Causes damage to organs (eyes) if swallowed.

Precautionary Statement(s):

Prevention:

P210	Keep away from heat, sparks, open flames, and hot surfaces. – No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical, ventilating, lighting, and other equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P260	Do not breathe fume, mist, vapours, spray.
P264	Wash hands and skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.

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P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing.

Response:

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTRE/doctor.
P330 Rinse mouth.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P312 Call a POISON CENTRE/doctor if you feel unwell.
P363 Wash contaminated clothing before reuse.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312 Call a POISON CENTRE/doctor if you feel unwell.
P321 Specific treatment (see supplemental first aid instruction on this label).
P370 + P378 In case of fire: Use appropriate foam, carbon dioxide, dry chemical powder, water spray or fog to extinguish.

Storage:

Store in a well ventilated place. Keep cool. Keep container tightly closed. Store locked up.

Disposal:

Dispose of contents/container in accordance with applicable regional, national and local laws and regulations.

Other Hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixture:

Chemical Name	CAS No.	%	Other Identifiers
Methanol	67-56-1	30-60	

Notes

The specific chemical identity and/or exact percentage of composition (concentration) has been withheld as a trade secret.

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Inhalation

Take precautions to ensure your own safety before attempting rescue (e.g. wear appropriate protective equipment). Remove source of exposure or move to fresh air. Keep at rest in a position comfortable for breathing. If breathing has stopped, trained personnel should begin rescue breathing. If the heart has stopped, trained personnel should start cardiopulmonary resuscitation (CPR) or automated external defibrillation (AED). Avoid mouth-to-mouth contact by using a barrier device. Get medical advice/attention if you feel unwell or are concerned.

Skin Contact

Avoid direct contact. Wear chemical protective clothing if necessary. Take off immediately contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Wash gently and thoroughly with lukewarm, gently flowing water and mild soap for 5 minutes. Get medical advice/attention if you feel unwell or are concerned. Thoroughly clean clothing, shoes and leather goods before reuse or dispose of safely.

Eye Contact

Avoid direct contact. Wear chemical protective gloves if necessary. Immediately rinse the contaminated eye(s) with lukewarm, gently flowing water for at least 30 minutes, while holding the eyelid(s) open. If eye irritation persists, get medical advice/attention.

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Ingestion

Rinse mouth with water. Never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Do not induce vomiting. If vomiting occurs naturally, lie on your side in the recovery position. Rinse mouth with water again. If breathing has stopped, trained personnel should immediately begin rescue breathing. If the heart has stopped, trained personnel should start cardiopulmonary resuscitation (CPR) or automated external defibrillation (AED). Avoid mouth-to-mouth contact by using a barrier device. Immediately call a Poison Centre or doctor. Treatment is urgently required.

Most Important Symptoms and Effects, Acute and Delayed

No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Immediate Medical Attention and Special Treatment

Target Organs

Eyes, liver, nervous system.

Special Instructions

Acute exposure to methanol, either through ingestion or breathing high airborne concentrations can result in symptoms appearing between 40 minutes and 72 hours after exposure. Symptoms and signs are usually limited to CNS, eyes and gastrointestinal tract. Because of the initial CNS's effects of headache, vertigo, lethargy and confusion, there may be an impression of ethanol intoxication. Blurred vision, decreased acuity and photophobia are common complaints. Treatment with ipecac or lavage is indicated in any patient presenting within two hours of ingestion. A profound metabolic acidosis occurs in severe poisoning and serum bicarbonate levels are a more accurate measure of severity than serum methanol levels. Treatment protocols are available from most major hospitals and early collaboration with appropriate hospitals is recommended.

Medical Conditions Aggravated by Exposure

Respiratory conditions.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Carbon dioxide, dry chemical powder or appropriate foam. Special "alcohol resistant fire-fighting foams".

Unsuitable Extinguishing Media

Water is not effective for extinguishing a fire. It may not cool product below its flash point.

Specific Hazards Arising from the Chemical

Highly flammable liquid and vapour. Can ignite at room temperature. Releases vapour that can form explosive mixture with air. Can be ignited by static discharge. Can accumulate static charge by flow, splashing or agitation. Even dilute solutions in water may be flammable. May travel a considerable distance to a source of ignition and flash back to a leak or open container. See Section 9 (Physical and Chemical Properties) for flash point and explosive limits. Burns with an invisible flame. May accumulate in hazardous amounts in low-lying areas especially inside confined spaces, resulting in a fire hazard.

In a fire, the following hazardous materials may be generated: toxic chemicals; very toxic carbon monoxide, carbon dioxide; very toxic, flammable formaldehyde.

Special Protective Equipment and Precautions for Fire-fighters

Review Section 6 (Accidental Release Measures) for important information on responding to leaks/spills.

See Skin Protection in Section 8 (Exposure Controls/Personal Protection) for advice on suitable chemical protective materials.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

Evacuate the area immediately. Isolate the hazard area. Keep out unnecessary and unprotected personnel. Evacuate downwind locations. Use the personal protective equipment recommended in Section 8 of this safety data sheet. Increase ventilation to area or move leaking container to a well-ventilated and secure area. Eliminate all ignition

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sources. Use grounded, explosion-proof equipment. May accumulate in hazardous amounts in low-lying areas especially inside confined spaces, if ventilation is not sufficient. Distant ignition and flashback are possible.

Environmental Precautions

Do not allow into any sewer, on the ground or into any waterway.

Methods and Materials for Containment and Cleaning Up

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). Use spark-proof tools and explosion-proof equipment. 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

Precautions for Safe 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. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapour or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.

Conditions for Safe Storage

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. Eliminate all ignition sources. 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 unlabeled containers. Use appropriate containment to avoid environmental contamination.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Chemical Name	ACGIH TLV®		OSHA PEL		AIHA WEEL	
	TWA	STEL	TWA	Ceiling	8-hr TWA	TWA
Methanol	200 ppm	250 ppm	200 ppm	250 ppm		

Appropriate Engineering Controls

General ventilation is usually adequate. For large scale use of this product: do not allow product to accumulate in the air in work or storage areas, or in confined spaces. Use local exhaust ventilation, if general ventilation is not adequate to control amount in the air. Use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically safe electrical systems in areas where this product is used and stored. Control static electricity discharges which includes bonding of equipment to ground. Use only non-combustible, compatible materials for walls, floors, ventilation system, air cleaning devices, pallets, shelving. Provide safety shower in work area, if contact or splash hazard exists.

Individual Protection Measures

Eye/Face Protection

Wear chemical safety goggles.

Skin Protection

Wear chemical protective clothing e.g. gloves, aprons, boots.

Nitrile rubber.

Respiratory Protection

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Not normally required if product is used as directed. For non-routine or emergency situations: wear a NIOSH approved air-purifying respirator with an organic vapour cartridge.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	Clear Purple liquid.
Odour	Pungent
Odour Threshold	Not available
pH	8 - 11 (100% solution)
Melting Point/Freezing Point	Not available (melting); -45 °C (-49 °F) (freezing)
Initial Boiling Point/Range	Not available
Flash Point	27.7 °C (81.9 °F) (closed cup)
Evaporation Rate	Not available
Flammability (solid, gas)	Not applicable
Upper/Lower Flammability or Explosive Limit	Not available (upper); Not available (lower)
Vapour Pressure	Not available
Vapour Density (air = 1)	Not available
Relative Density (water = 1)	0.90 - 0.97 at 20 °C
Solubility	Soluble in water; Soluble in all proportions in alcohols (e.g. ethanol).
Partition Coefficient, n-Octanol/Water (Log Kow)	Not available
Auto-ignition Temperature	Not available
Decomposition Temperature	Not available
Viscosity	Not available (kinematic); Not available (dynamic)
Other Information	
Physical State	Liquid
Molecular Weight	Not available

SECTION 10. STABILITY AND REACTIVITY

Reactivity

None known.

Chemical Stability

Normally stable.

Possibility of Hazardous Reactions

None known.

Conditions to Avoid

Heat. Open flames, sparks, static discharge, heat and other ignition sources.

Incompatible Materials

Slightly reactive or incompatible with the following materials: oxidizing agents (e.g. peroxides), strong acids (e.g. hydrochloric acid), strong bases (e.g. sodium hydroxide).

Not corrosive to metals.

Hazardous Decomposition Products

Very toxic carbon monoxide, carbon dioxide; very toxic, flammable formaldehyde.

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SECTION 11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

Ingestion; eye contact; skin contact; inhalation.

Acute Toxicity

Chemical Name	LC50	LD50 (oral)	LD50 (dermal)
Methanol	83867.5 mg/m ³ (rat) (4-hour exposure)	5628 mg/kg (rat)	15800 mg/kg (rabbit)

LC50: Not applicable.

LD50 (oral): Not applicable.

LD50 (dermal): Not applicable.

Skin Corrosion/Irritation

Human experience shows very mild irritation.

Serious Eye Damage/Irritation

Animal tests show serious eye irritation.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

At high concentrations severe nose and throat irritation.

Skin Absorption

May be harmful based on animal tests.

Ingestion

Toxic, can cause death depression of the central nervous system, impaired vision and blindness. In some cases, there may be delayed effects on the nervous system. Symptoms may include headache, nausea, vomiting, dizziness, drowsiness and confusion. A severe exposure may cause stomach pain, muscle pain, difficult breathing and coma. Vision can be impaired and permanent blindness can result. There may be other permanent effects on the nervous system e.g. tremor, seizures.

Aspiration Hazard

Not known to be an aspiration hazard.

STOT (Specific Target Organ Toxicity) - Repeated Exposure

If swallowed: liver function tests may show abnormal results.

Respiratory and/or Skin Sensitization

Not known to be a respiratory sensitizer. Not known to be a skin sensitizer.

Carcinogenicity

Chemical Name	IARC	ACGIH®	NTP	OSHA
Methanol	Not Listed	Not designated	Not Listed	Not Listed

May cause cancer based on animal studies.

Reproductive Toxicity

Development of Offspring

Animal studies show effects on the offspring. If inhaled: known to cause: decreased weight, birth defects. Teratogenic(external, soft tissue and skeletal defects) embryotoxic (late resorptions).

Sexual Function and Fertility

Not known to cause effects on sexual function or fertility.

Effects on or via Lactation

No information was located.

Germ Cell Mutagenicity

Conclusions cannot be drawn from the limited studies available.

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Interactive Effects

No information was located.

SECTION 12. ECOLOGICAL INFORMATION

Toxicity

Acute Aquatic Toxicity

Chemical Name	LC50 Fish	EC50 Crustacea	ErC50 Aquatic Plants	ErC50 Algae
Methanol	15400 mg/L (Lepomis macrochirus (bluegill); 96-hour)	10000 mg/L (Daphnia magna (water flea); 48-hour)		

Chronic Aquatic Toxicity

Chemical Name	NOEC Fish	EC50 Fish	NOEC Crustacea	EC50 Crustacea
Methanol	7900 mg/L (Lepomis macrochirus (bluegill); 200-hrs)			

Persistence and Degradability

Degrades rapidly based on quantitative tests.

Bioaccumulative Potential

This product and its degradation products are not expected to bioaccumulate.

Mobility in Soil

No information was located.

Other Adverse Effects

There is no information available.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

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

Regulation	UN No.	Proper Shipping Name	Transport Hazard Class(es)	Packing Group
Canadian TDG	1986	ALCOHOLS, FLAMMABLE, TOXIC, N.O.S. (Methanol)	3 (6.1)	III
US DOT	1986	ALCOHOLS, FLAMMABLE, TOXIC, N.O.S. (Methanol)	3 (6.1)	III

Environmental Hazards

Not applicable

Special Precautions for User

Please note: In containers of 450L or less, this product meets the requirements for exemption under TDG regulation special provisions, part 1, section 1.36b: Class 3, Flammable liquids: Alcohol Exemption.

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In containers of 5 L (5Kg) capacity or less this product is classified as a "Consumer Commodity" under DOT regulations.

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code

SECTION 15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations

Canada

Domestic Substances List (DSL) / Non-Domestic Substances List (NDSL)

All ingredients are listed on the DSL/NDSL.

USA

Toxic Substances Control Act (TSCA) Section 8(b)

All ingredients are listed on the TSCA Inventory.

Additional USA Regulatory Lists

California Proposition 65: WARNING: This product contains chemicals known to the State of California to cause birth defects.

SECTION 16. OTHER INFORMATION

SDS Prepared By Compliance and Regulatory Department

Phone No. 905-878-5544

Date of Preparation October 19, 2015

Additional Information We are committed to uphold the Industry Consumer Ingredient Communication Voluntary Initiative.

Please send us your request by visiting our website at www.recochem.com.

Ingredients present (intentionally added ingredients) at a concentration of greater than one percent (1%) shall be listed in descending order of predominance. Ingredients present at a concentration of not more than one percent shall be listed but may be disclosed without respect to order of predominance.

Disclaimer

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.

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