VICTORIA GOLD CORP

EAGLE GOLD MINE

SPILL RESPONSE PLAN

Version 2022-01

NOVEMBER 2022

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DOCUMENT CONTROL

Submission History

Version Number	Version Date	Document Description and Revisions Made
2013-01	Apr 2013 (draft)	Submission of preliminary draft
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	Jun 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 2017-01 was submitted to the Department of Energy, Mines and Resources and the Yukon Water Board to satisfy VGC's annual reporting requirements.
2017-02	Jul 2017	Revisions made to reflect the current site general arrangement and submitted as part of a consolidated application for *Environment Act* permits.
2019-01	Mar 2019	Revisions made in accordance with Clause 8 of QZ14-041 and with Paragraph 2.5 of Schedule C, Part 2 of QML-0011, which require an annual review of the Spill Response Plan.
2021-01	Mar 2021	Revisions made in accordance with Clause 8 of QZ14-041-1 and with Paragraph 2.5 of Schedule C, Part 2 of QML-0011, which require an annual review of the Spill Response Plan. Primary revision is to clarify soil sampling protocols as per the Yukon Contaminated Sites Regulations and discussions with relevant regulatory agency representatives.
2022-01	November 2022	Revisions made to update site layout to reflect current and future mine site layout, contact information updates, and editorial updates to maintain document consistency and accuracy and as required based on review conducted by Yukon Government of Version 2021-01.

Version 2022-01 of the Spill Response Plan (the Plan) for the Project has been revised in November 2022 to update Version 2021-01 submitted in March 2021. The table below is intended to identify modifications to the Plan, since the previously submitted version, and provide the rationale for such modifications.

Version 2022-01 Revisions

Section	Revision/Rationale
Full Document	▪ Revisions throughout to reflect changes to certain position titles and responsible persons. ▪ Minor text revisions to acknowledge status of certain facilities.
Table 2.2-1	▪ Complete revision to reflect current hazardous materials on the Mine and to provide spill reporting threshold for each specific substance.
Figure 2.4-1	▪ Updated with current mine site layout and substances.
Section 3.1	▪ Updated to include reference to mobile spill trailer on site. ▪ Minor text revision to acknowledge spill equipment selection based on site experience.
Table 3.1-1	▪ Updated to reflect spill response equipment based on actual site inventory and availability. ▪ Updated to include Spill Response Trailer.
Figure 3.1-1	▪ Updated with current mine site layout and location of spill kits and spill response trailer.
Figure 3.2-1	▪ Updated responsible personnel.
Table 3.3-1	▪ Complete revision to reflect current hazardous materials on the Mine and to provide specific cleanup or disposal methods for each specific substance.
Section 3.3	▪ Updated to correct the reference to preventative measures.
Table 3.4-1	▪ Updated offsite contact information.
Section 3.6	▪ Updated to reference acronym. ▪ Minor text revision to accurate describe surface water controls around the LTF.
Section 5	▪ Inclusion of cross reference to Cyanide Management Plan for training requirements.
Section 6.2	▪ Updated to reflect company policy of all staff receiving WHMIS training.
Appendices	▪ Appendix A updated to reflect Class 4 Mining Land Use Approval LQ00562 conditions. ▪ Removal of previous Appendix C for Reportable Spill Thresholds as information now included within Table 2.2-1. ▪ Appendix C Safety Data Sheets updated to reflect all current substances. ▪ Appendix D added to reflect Spill Response Trailer inventory.

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1 INTRODUCTION

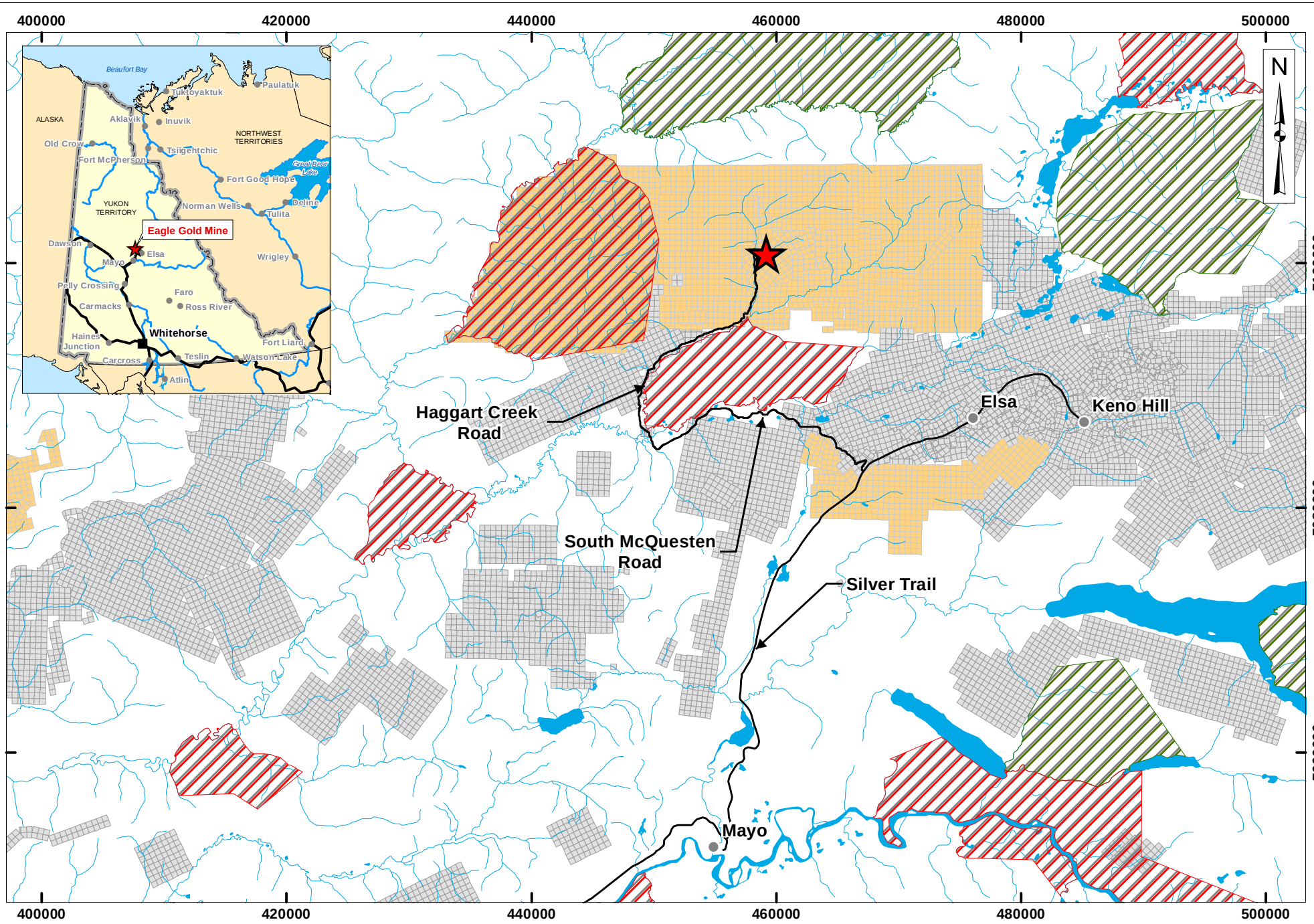
Victoria Gold (Yukon) Corp. (VGC), a directly held-wholly owned subsidiary of Victoria Gold Corp., has constructed, is currently operating, and proposes to close and reclaim a gold mine in central Yukon. The Eagle Gold Project ('the Project') is located 85 km from Mayo Yukon using existing highway and access roads (Figure 1.1-1). The Project involves 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.

VGC is committed to exploring for, building, operating and closing mines in an environmentally, socially and financially responsible manner. VGC will endeavor to protect the environment in which it operates by providing a safe, responsible and efficient operating atmosphere through the development, and implementation of corporate policies as well as development and operational plans.

The purpose of this Spill Response Plan (the Plan) is to enable timely and effective responses to spills throughout the life of the Project. The Plan provides measures to prevent spills from occurring, and response measures to be implemented in the event of a spill.

This plan was informed by the guidelines provided by Government of Yukon's Department of Energy, Mines and Resources and the Yukon Water Board in the Plan Requirement Guidance for Quartz Mining Projects (August 2013), the Terms and Conditions of Recommendation, Proponent Commitments and Proponent Mitigations specified in the Final Screening Report and Recommendation (Yukon Environmental and Socio-economic Assessment Board Project Assessment 2010-0267), and the regulatory approvals issued for the Project.

Appendix A summarizes the requirements pertaining to spill prevention and response outlined in the Final Screening Report and Recommendation and other licenses and permits issued to date.



Legend:

- Eagle Gold Mine
- Victoria Gold Claims
- Other Claims
- Town / Village
- Road
- Watercourse
- Category A Settlement Land
- Category B Settlement Land

VICTORIA GOLD CORP

0 3 6 12
Kilometres

Projection:	Drawn By:	EAGLE GOLD MINE YUKON TERRITORY
NAD 83 Zone 8N	HC	
Date:	Figure:	Mine Location
2020/01/27	1.1-1	

2 SPILL DEFINITION AND CATEGORIES

2.1 SPILL DEFINITION

A spill is defined under Section 132 of the *Yukon Environment Act* ("the Act") as a "release of a substance into the natural environment; from or out of a structure, vehicle or other container; and that is abnormal in quantity or quality in light of all the circumstances of the release; or in excess of an amount specified in the regulations". For the purposes of the *Act*, a "substance" means a hazardous substance, pesticide, contaminant or special waste.

2.2 REPORTABLE SPILLS

Schedule A of the *Yukon Spills Regulations* defines reportable spill quantities in reference to hazardous material classes defined under the *Transportation of Dangerous Goods Regulations*. The release into the environment of a hazardous material above the reportable quantities or any release into a watercourse is a reportable spill under the *Yukon Spills Regulations* and VGC is required immediately notify the 24-hour Yukon Spill Report line at:

867-667-7244

All reportable spills must be reported as soon as possible, within 24 hours. The reporting should be performed by the Environmental Manager or their designate. If the Environmental Manager is not on site, the Environmental Coordinator should perform the reporting. If there is uncertainty regarding the volume or type of material that has been spilled, it is advised that a report be made to the Spill Hotline.

Spill Reporting Forms will be completed for all spills (Appendix B).

Reporting thresholds for all substances including hazardous materials, contaminant or special waste used or stored at the Project are provided in Table 2.2-1 and Table 2.2-2.

Safety Data Sheets (SDS) for all hazardous substances used for the Project at risk of spills are provided in Appendix C.

Table 2.2-1: Reportable Spill Thresholds

Substance Name	Substance Type	Location	Reportable Threshold
Caustic Soda Pels	Corrosives	ADR Plant	5 kg
Ferric Chloride	Corrosives	Mine Water Treatment Plant	5 L
High Calcium Quicklime	Corrosives	ADR Plant, Lime Silo	5 kg
Hydrochloric Acid	Corrosives	ADR Facility	5 L
Hydrogen Peroxide	Corrosives	Mine Water Treatment Plant	5 L
Lafarge Hydrated Lime	Corrosives	Mine Water Treatment Plant, Crushing Facility	5 L
Newtrol C	Corrosives	Orica	5 L
Nitric Acid	Corrosives	ADR Facility	5 L
Poly-Circ	Corrosives	Orica	5 L

Substance Name	Substance Type	Location	Reportable Threshold
Sodium Hydroxide	Corrosives	ADR Facility	5 L
Sodium Hypochlorite	Corrosives	Mine Water Treatment Plant	5 L
Sulfamic Acid	Corrosives	Orica	5 L
Sulfuric Acid	Corrosives	Mine Water Treatment Plant	5 L
Superclean Degreaser	Corrosives	Warehouse & Truck shop	5 L
Sodium Bisulfite	Corrosives	Mine Water Treatment Plant	5 L
Fortan Extra	Explosives	Explosives Storage, Magazine Storage	Any amount
Brakleen	Flammable Gas	ADR Facility, Warehouse & Truck Shop, Waste Oil Burner, Crushing facility	5 L
Acetylene Gas	Flammable Gas	Warehouse and Truck Shop, Site Services, Crusher, ADR Facility	Any amount of gas spilled from container over 100L as a result of equipment failure, error, or deliberate action or inaction
Propane	Flammable Gas	Camp	Any amount of gas spilled from container over 100L as a result of equipment failure, error, or deliberate action or inaction
Wire Rope Lubricant	Flammable Gas	Mobile Maintenance	Any amount of gas spilled from container over 100L as a result of equipment failure, error, or deliberate action or inaction
Diesel Fuel	Flammable Liquid	ADR Facility, Camp, Warehouse & Truck Shop, Crushing Facility, Waste Oil Burner, Land Treatment Facility, Substation	200 L (any amount if spilled into a watercourse)
Gasoline, Unleaded	Flammable Liquid	Crushing Facility, Camp, Warehouse & Truck Shop, Substation, Land Treatment Facility	200 L (any amount if spilled into a watercourse)
Jet fuel A and B	Flammable Liquid	Helipad, southeast of camp	200 L
Mobil Antifreeze	Flammable Liquid	ADR Facility, Warehouse & Truck shop	5 L
Brake Fluid DOT3	Lubricating Oil	ADR Facility, Warehouse & Truck Shop, Waste Oil Burner, Crushing facility	200 L
CAT Hydraulic Oil	Lubricating Oil	ADR Facility, Warehouse & Truck Shop, Waste Oil Burner, Crushing facility	200 L
Chevron sup. Motor Oil SAE 30, 40, 10W-40, 20W-50	Lubricating Oil	ADR Facility, Warehouse & Truck Shop, Waste Oil Burner, Crushing facility	200 L
Compressor Oil	Lubricating Oil	ADR Facility, Warehouse & Truck Shop, Waste Oil Burner, Crushing facility	200 L
Copper Anti-sieze Lubricating Compound	Lubricating Oil	ADR Facility, Warehouse & Truck Shop, Waste Oil Burner, Crushing facility	200 L

Substance Name	Substance Type	Location	Reportable Threshold
DELO 400 LE Synthetic SAE 5W-40	Lubricating Oil	ADR Facility, Warehouse & Truck Shop, Waste Oil Burner, Crushing facility	200 L
Dexron Gear Oil	Lubricating Oil	ADR Facility, Warehouse & Truck Shop, Waste Oil Burner, Crushing facility	200 L
Duron-E 15W-40	Lubricating Oil	ADR Facility, Warehouse & Truck Shop, Waste Oil Burner, Crushing facility	200 L
Hydraulic Fluid 0D-15-10	Lubricating Oil	ADR Facility, Warehouse & Truck Shop, Waste Oil Burner, Crushing facility	200 L
NULON 85W-140 Limited	Lubricating Oil	ADR Facility, Warehouse & Truck Shop, Waste Oil Burner, Crushing facility	200 L
Petro Canada ATF D3M	Lubricating Oil	ADR Facility, Warehouse & Truck Shop, Waste Oil Burner, Crushing facility	200 L
Power Steering Fluid	Lubricating Oil	ADR Facility, Warehouse & Truck Shop, Waste Oil Burner, Crushing facility	200 L
Two Cycle Motor Oil	Lubricating Oil	ADR Facility, Warehouse & Truck Shop, Waste Oil Burner, Crushing facility	200 L
Winter Treat Plus	Lubricating Oil	ADR Facility, Warehouse & Truck Shop, Waste Oil Burner, Crushing facility	200 L
Gas Line Antifreeze	Misc. Product	ADR Facility, Warehouse & Truck shop	5 L (any amount if spilled into watercourse)
HD Expert Premium Antifreeze/Coolant	Misc. Product	Mobile Maintenance, Fixed Maintenance	5 L (any amount if spilled into watercourse)
Lead	Misc. Product	ADR Facility	5 kg (any amount if spilled into watercourse)
Loctite 271 HSTL	Misc. Product	Warehouse & Truck Shop	5 L
Oxygen	Non-Flammable Gas	Medical Storage Room (A-Dorm), Medical Clinic, Ambulance	Any amount of gas spilled from container over 100 L as a result of equipment failure, error, or deliberate action or inaction
Ammonium Nitrate	Oxidizing Substance	Orica	50 kg
Sodium Borate, Anhydrous	Oxidizing Substance	ADR Facility	50 kg
Sodium Nitrite	Oxidizing Substance	Orica	50 kg
Sodium Cyanide	Toxic Substance	ADR Facility	5 kg
Windshield Wash	Toxic Substance	Warehouse & Truck shop	5 L

Table 2.2-2: Reportable Spill Thresholds for Special Waste

Substance Type	Time period	Reportable Threshold
Special Waste that may cause an adverse effect	N/A	Any amount

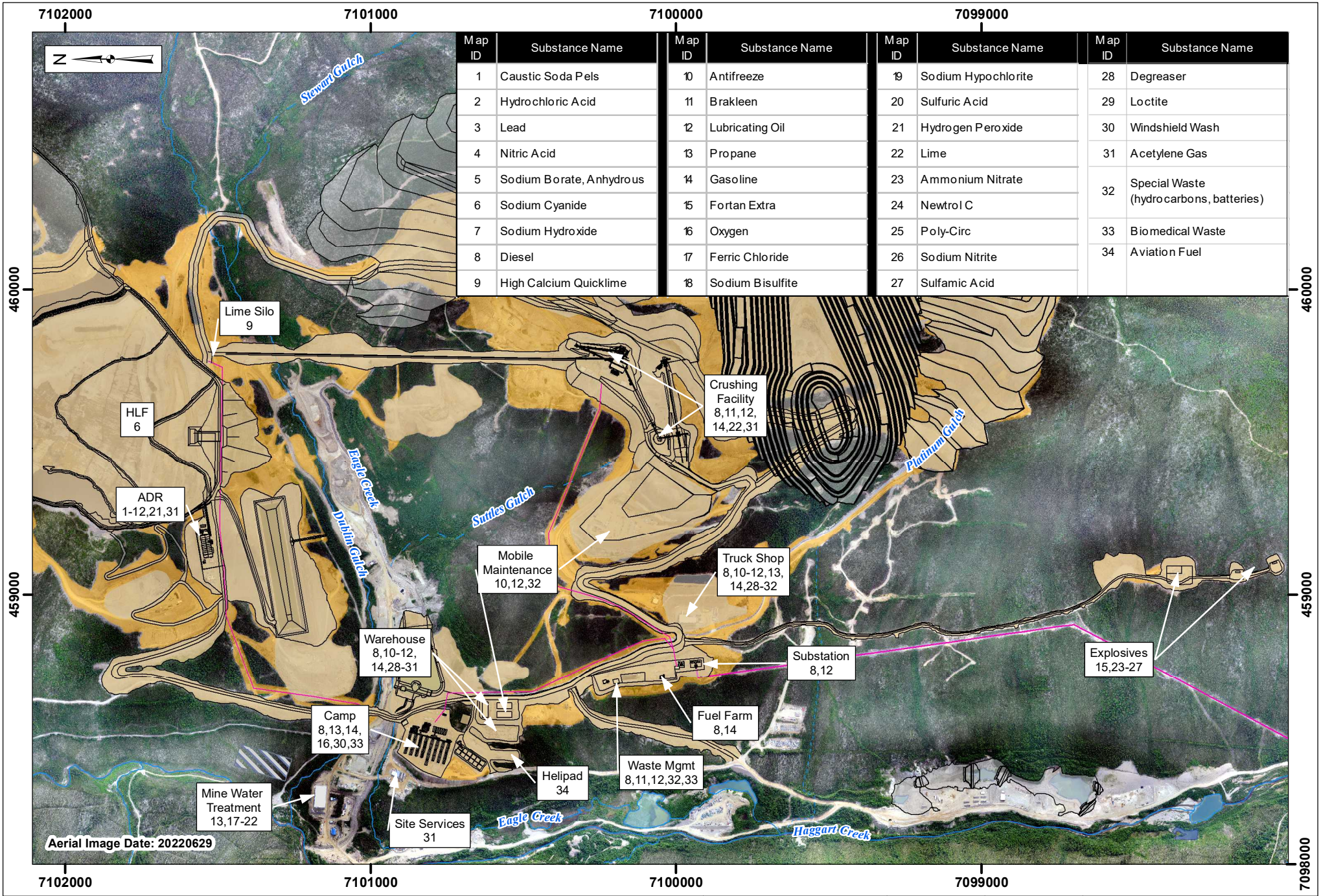
Substance Type	Time period	Reportable Threshold
Solid Special Waste	24 hours	500 g
	30 days	5 kg
Liquid Special Waste	24 hours	500 ml
	30 days	5 L
Mixture of Solid and Liquid Waste	24 hours	500 g or 500 ml whichever is less
	30 days	5 kg or 5 L whichever is less

2.3 NON-REPORTABLE SPILLS

Spilled materials which are below the reporting thresholds are not required to be reported externally; however, all spills (whether reportable externally or not) must be reported internally to the VGC Environmental Department, and the VGC Environmental Department will maintain a record of all spills. The VGC Spill Report Form (Appendix B) is to be used by all contractors and Victoria Gold employees who first observe a spill. Non-reportable spills will be handled according to the Spill Response Procedure described in Section 3 of this Plan. After any non-reportable spill is controlled and cleaned up, the Environmental Department will complete the Spill Response Form and perform an inspection of the area as required. Spill cleanup supplies used for the response must be replenished by area supervisors.

2.4 STORAGE LOCATIONS AND USE OF HAZARDOUS MATERIALS

Hazardous materials used on site and storage locations are described in the Solid Waste and Hazardous Materials Management Plan and shown on Figure 2.4-1. VGC will ensure that spill kits compatible with the type and volume of material stored and used are available at sites where hazardous materials are stored and used.



Map ID	Substance Name
1	Caustic Soda Pels
2	Hydrochloric Acid
3	Lead
4	Nitric Acid
5	Sodium Borate, Anhydrous
6	Sodium Cyanide
7	Sodium Hydroxide
8	Diesel
9	High Calcium Quicklime

Map ID	Substance Name
10	Antifreeze
11	Brakleen
12	Lubricating Oil
13	Propane
14	Gasoline
15	Fortan Extra
16	Oxygen
17	Ferric Chloride
18	Sodium Bisulfite

Map ID	Substance Name
19	Sodium Hypochlorite
20	Sulfuric Acid
21	Hydrogen Peroxide
22	Lime
23	Ammonium Nitrate
24	Newtrol C
25	Poly-Circ
26	Sodium Nitrite
27	Sulfamic Acid

Map ID	Substance Name
28	Degreaser
29	Loctite
30	Windshield Wash
31	Acetylene Gas
32	Special Waste (hydrocarbons, batteries)
33	Biomedical Waste
34	Aviation Fuel

Legend:

- Major Facility
- Site Power
- Reserved Area
- Current Construction and Mining Impacted Areas
- Watercourse - Perennial
- Watercourse - Ephemeral
- Watercourse - Intermittent

VICTORIA GOLD CORP

0 125 250 500
Metres

Projection:	Drawn By:
NAD 83 UTM Zone 8N	HC
Date:	Figure:
2022/11/04	2.4-1

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YUKON TERRITORY

Storage Areas for Hazardous Materials

3 SPILL RESPONSE PROCEDURE

The immediate priority in the event of a spill is to ensure the safety of any personnel in the immediate vicinity and to minimize the potential impact to the environment due to a sustained release of hazardous material. The implementation of spill containment measures and site cleanup and remediation will only be undertaken when safety is assured and the source of the release has been controlled.

In the case of a small spill, for example an overturned drip tray or a small coolant leak noticed under equipment, the first observer should immediately try to contain the spill. This can be done by using a drip tray, or placing absorbent pads under the leak.

Before responding to any large spill, it is important to first STOP and THINK:

- Identify hazards
- Assess Risks
- Control Risks

The priority sequence for spill response is as follows:

1. **ENSURE SAFETY**
    - Identify the spilled material (if not possible, assume dangerous)
    - Use Personal Protective Equipment (PPE)
    - Ensure the safety of nearby personnel
    - Remove all ignition sources – no smoking
2. **FIRST AID**
    - Call for assistance if necessary
    - Attend to the injured
    - Begin first aid immediately as required by following the guidelines from SDS for the substance released
3. **STOP THE FLOW (IF POSSIBLE)**
    - Close valves, shut off pumps and plug holes or leaks (if safe to do so)
4. **NOTIFY YOUR SUPERVISOR AND/OR SPILL RESPONSE TEAM**
    - Provide basic information of spill – What, Who, Where, When and How
    - Activate Spill Response Team
5. **SECURE THE AREA**
    - Limit access to the spill area and prevent unauthorized entry

6. CONTAIN THE RELEASE

- Block off and protect drains, culverts, and other drainage structures which are not designated for spill management
- Use dykes, berms, trenches, ditches or sorbent material from spill kits to control the spilled substances

7. CLEAN-UP

- Under the direction of the Spill Response Team or Environmental Personnel, begin clean-up activities

8. REPORT THE SPILL

- The Environmental Manager, or designate, will report the spill to the appropriate agencies.

9. CONDUCT INCIDENT INVESTIGATION

- Undertake appropriate corrective and preventative action and document all activities on the Spill Report Form

3.1 SPILL RESPONSE EQUIPMENT

Spill kits will be available at all hazardous materials storage sites and transfer areas shown in Figure 2.4-1. Spill kits will also be available in hazardous material transporters, heavy equipment and light trucks. Spill kits will contain booms, sorbent materials, shovels and PPE, and fire extinguishers will be located in close proximity to assist in responding to a possible spill incident involving flammable materials. Spill kits will also contain a kit inventory sheet to assist with monthly inspections and the replenishment of spent supplies and equipment. The VGC Environmental Department will be responsible for monthly spill kit inspections. The area supervisors will be responsible for the replenishment of spent supplies and equipment, and ensuring that their worksite is equipped with a fully stocked 50 Gallon Spill Response Kit. Spare spill response supplies will be maintained on site to replenish spill kits and to be deployed to other locations in the event of a spill requiring additional equipment or as a replacement until spent, location specific, kits can be replenished.

If there is a risk of spills on open water, surface booms will be available for deployment.

All spill kits will include the 2016 Emergency Response Guidebook which has been developed jointly by Transport Canada (TC), the U.S. Department of Transportation (DOT), the Secretariat of Transport and Communications of Mexico (SCT) and with the collaboration of CIQUIME (Centro de Informaciòn Quìmica para Emergencias) of Argentina, for use by fire fighters, police, and other emergency services personnel who may be the first to arrive at the scene of a transportation incident involving dangerous goods.

The Emergency Response Guidebook is a guide to aid first responders in quickly identifying the specific or generic hazards of the material(s) involved in the incident, and protecting themselves and the general public during the initial response phase of the incident.

A mobile spill response trailer is also available for emergency responses and to provide additional support as needed to spills throughout the Project site. This trailer is secured at the Emergency Response Training building and is accessible to authorized personnel. Should the spill response trailer be required for

emergency response or site support, the Area Supervisor will contact either the ERT site commander or the Environment Manager (or designates) for trailer access.

Figures 3.1-1 and 3.1-2 provide the location of Spill Response Equipment and Table 3.1-1 provides an inventory of the primary Spill Response Equipment located around the Project Site. Spill Response Equipment is based on best practice and site knowledge of the most effective spill materials for the Project location. Area supervisors are responsible for ensuring spill response equipment is sufficient for the substances and tasks being performed at their respective locations.

Table 3.1-1: Inventory of Spill Response Equipment Planned for the Project

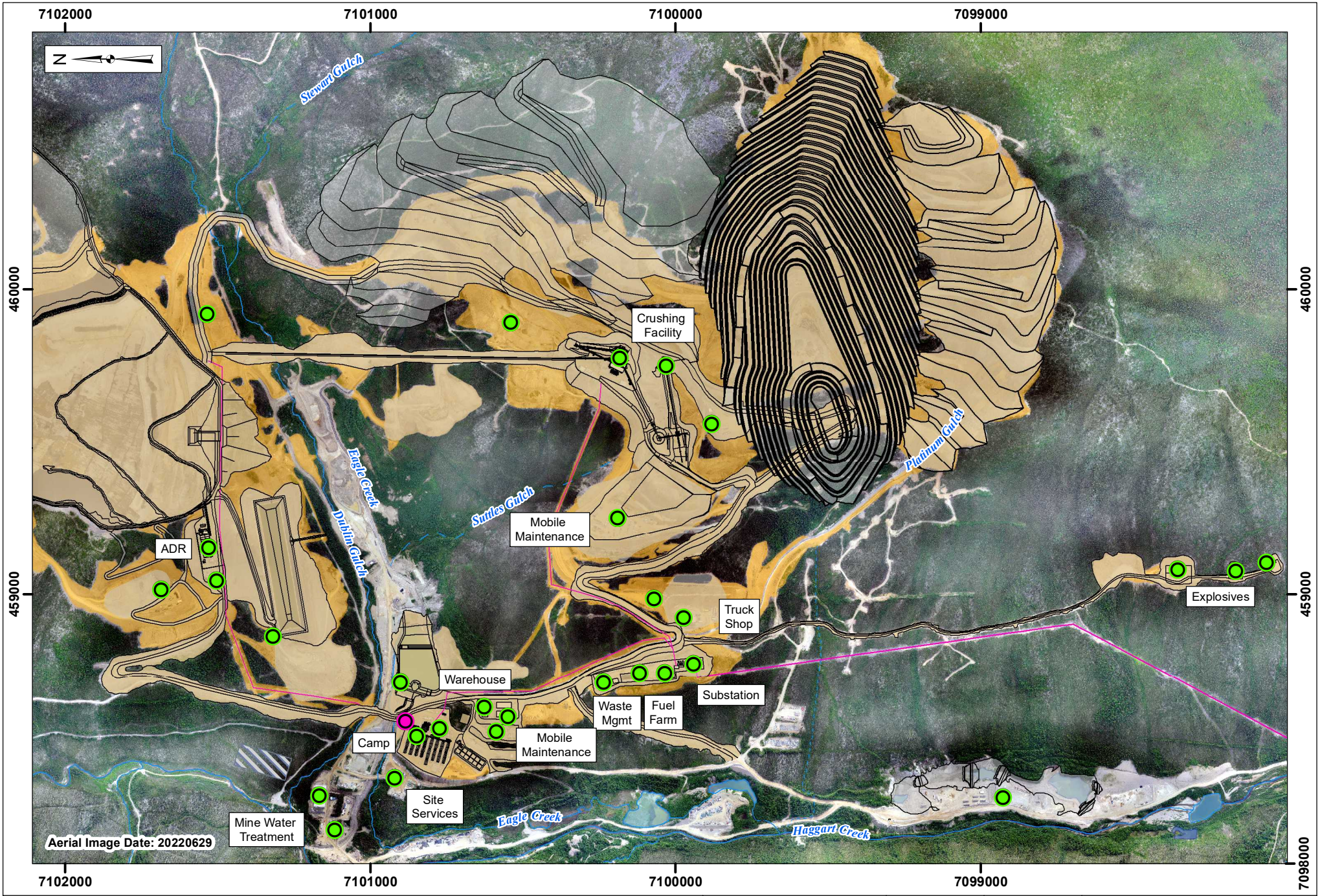
Location	Type of Equipment
Spill Response Mobile Unit (located at ERT Building)	Spill response mobile trailer with hitch: ▪ Contents detailed in Appendix D.
ADR Facility and Assay Lab – Reagent Storage area	2X100 Gallon Spill response carts containing: ▪ Booms, sorbent pads, socks, dikes, pillows ▪ Hazmat Chemical Absorbent Pulp ▪ Disposal bags and Ties ▪ Spill drain berm or boom ▪ Spill Response Plan ▪ Emergency Response Guidebook ▪ Chemical-resistant gloves ▪ Goggles This location will also be equipped with the following: ▪ Self-contained breathing apparatus ▪ Tyvek suit ▪ Totally-Encapsulating Chemical Protective (TECP) suits Escape air packs (10 minute)
ADR Facility and Assay Lab – At each reagent handling area	2X50 Gallon Spill kits containing: ▪ Sorbent Pads, Socks, Pillows ▪ Disposal Bags and Ties ▪ Hazmat Chemical Absorbent Pulp ▪ Spill drain berm or boom ▪ Chemical-resistant Gloves ▪ Tyvek suit ▪ Goggles ▪ Spill Response Plan ▪ Emergency Response Guidebook This location will also be equipped with the following: ▪ Self-contained breathing apparatus ▪ Escape air packs (10 minute)
Mine water treatment plant (under construction)	1X100 Gallon Spill response carts containing: ▪ Booms, sorbent pads, socks, dikes, pillows ▪ Hazmat Chemical Absorbent Pulp ▪ Disposal bags and Ties ▪ Chemical-resistant Gloves

Location	Type of Equipment
	▪ Goggles ▪ Spill drain berm or boom ▪ Spill Response Plan ▪ Emergency Response Guidebook This location will also be equipped with the following: ▪ Self-contained breathing apparatus ▪ Escape air packs (10 minute)
Truck shop	2 X 50 Gallon Spill kits containing: ▪ Booms, Sorbent Pads, Socks, Pillows ▪ Disposal Bags and Ties ▪ Granular Absorbent ▪ Spill drain berm or boom ▪ Chemical-resistant Gloves ▪ Goggles ▪ Spill Response Plan ▪ Emergency Response Guidebook
Crushing and screening plants	1 X 50 Gallon Spill kits containing: ▪ Sorbent Pads, Socks, Pillows ▪ Disposal Bags and Ties ▪ Granular Absorbent ▪ Spill drain berm or boom ▪ Chemical-resistant Gloves ▪ Goggles ▪ Spill Response Plan ▪ Emergency Response Guidebook This location will also be equipped with the following: ▪ Respirators (requires fit testing)
Fuel storage areas	1 X 50 Gallon Spill kits containing: ▪ Sorbent Pads, Socks, Pillows ▪ Disposal Bags and Ties ▪ Granular Absorbent ▪ Spill drain berm or boom ▪ Chemical-resistant Gloves ▪ Goggles ▪ Spill Response Plan ▪ Emergency Response Guidebook
Explosives storage facility	1 X 50 Gallon Spill kits containing: ▪ Sorbent Pads, Socks, Pillows ▪ Disposal Bags and Ties ▪ Granular Absorbent ▪ Spill drain berm or boom ▪ Chemical-resistant Gloves ▪ Goggles

Location	Type of Equipment
	▪ Spill Response Plan ▪ Emergency Response Guidebook
Explosives magazine	1 X 50 Gallon Spill kits containing: ▪ Sorbent Pads, Socks, Pillows ▪ Disposal Bags and Ties ▪ Granular Absorbent ▪ Spill drain berm or boom ▪ Chemical-resistant Gloves ▪ Goggles ▪ Spill Response Plan ▪ Emergency Response Guidebook
Camp	1 X 50 Gallon Spill kits containing: ▪ Booms, Sorbent Pads, Socks, Pillows ▪ Disposal Bags and Ties ▪ Granular Absorbent ▪ Spill drain berm or boom ▪ Chemical-resistant Gloves ▪ Goggles ▪ Spill Response Plan ▪ Emergency Response Guidebook
Solid Waste Storage Area	1 X 50 Gallon Spill kits containing: ▪ Sorbent Pads, Socks, Pillows ▪ Disposal Bags and Ties ▪ Granular Absorbent ▪ Spill drain berm or boom ▪ Chemical-resistant Gloves ▪ Goggles ▪ Spill Response Plan ▪ Emergency Response Guidebook
Substation	2 X 50 Gallon Spill kits containing: ▪ Sorbent Pads, Socks, Pillows ▪ Disposal Bags and Ties ▪ Granular Absorbent ▪ Spill drain berm or boom ▪ Chemical-resistant Gloves ▪ Goggles ▪ Spill Response Plan ▪ Emergency Response Guidebook
Inside mine vehicles: Fuel carts Utility vehicles Explosive transport vehicles Emergency response vehicles	Vehicle spill kits containing: ▪ Sorbent Pads, Socks and Pillows ▪ Disposable Bags and Ties ▪ Granular Absorbent ▪ Neoprene Drain Cover

Location	Type of Equipment
	▪ Chemical-resistant Gloves ▪ Goggles ▪ Shovels ▪ Spill Response Plan ▪ Emergency Response Guidebook
Strategic locations along access road	1 X 50 Gallon Spill kits containing: ▪ Booms, Sorbent Pads, Socks, Pillows ▪ Disposal Bags and Ties ▪ Granular Absorbent ▪ Chemical-resistant Gloves ▪ Goggles ▪ Spill Response Plan ▪ Emergency Response Guidebook

An inventory of spill kits will be maintained and routine inspections will be carried out to ensure that they are suitably stocked. SDS will be available for the substances used in the area serviced by the kit.



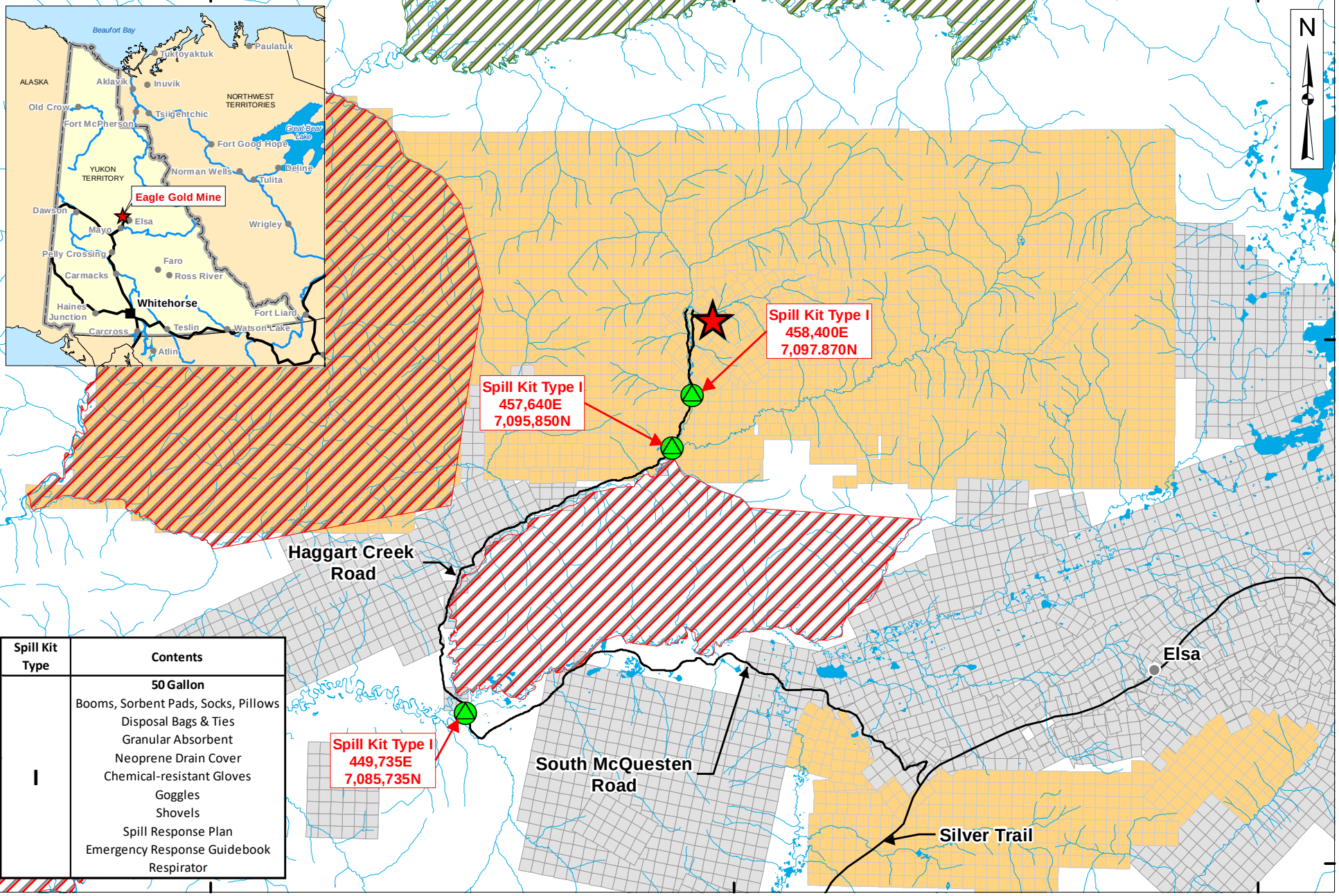
Legend:

- Spill Kit
- Spill Response Trailer
- Current Construction and Mining Impacted Areas
- Reserved Area
- Major Facility
- Site Power
- Watercourse - Perennial
- Watercourse - Ephemeral
- Watercourse - Intermittent

VICTORIA GOLD CORP

0 125 250 500
Metres

Projection:	Drawn By:	EAGLE GOLD MINE YUKON TERRITORY
NAD 83 UTM Zone 8N	HC	
Date:	Figure:	Location of Spill Response Equipment
2022/11/04	3.1-1	



Spill Kit Type	Contents
I	**50 Gallon** Booms, Sorbent Pads, Socks, Pillows Disposal Bags & Ties Granular Absorbent Neoprene Drain Cover Chemical-resistant Gloves Goggles Shovels Spill Response Plan Emergency Response Guidebook Respirator

Legend:

- Spill Kit Location
- Town / Village
- Category A Settlement Land
- Victoria Gold Claims
- Eagle Gold Mine
- Category B Settlement Land
- Other Claims
- Road
- Watercourse

VICTORIA GOLD CORP

0 1.25 2.5 5
Kilometres

Projection:	Drawn By:
NAD 83 Zone 8N	HC
Date:	Figure:
2021/04/05	3.1-2

EAGLE GOLD MINE
YUKON TERRITORY

Additional Spill Response Resource Locations

3.2 DUTIES AND RESPONSIBILITIES

To ensure human safety and limit potential environmental effects resulting from a spill, all site personnel will have specific responsibilities when responding to a spill. The responsibilities for spill response are summarized in Table 3.2-1 and depicted in Figure 3.2-1.

Table 3.2-1: Position and Responsibilities of Personnel Involved in Spill Response

Position	Responsibilities
All Personnel (Discoverer)	▪ Assess the initial severity of the spill and safety concerns ▪ Identify the source of the spill ▪ Ensure the safety of nearby personnel ▪ Begin first aid immediately as required ▪ Report all spills to Supervisor and Environmental Manager as soon as possible ▪ Determine the size of the spill and, if safe to do so, stop or contain it ▪ Remove all ignition sources if safe to do so ▪ Participate in spill response as a member of cleanup crew under the direction of the Spill Response Team
Supervisors	▪ Contact the Area Manager or Vice President and General Manager ▪ Report to the site of the spill ▪ Gather information on the spill (substance, location, approximate area/quantity, in water, etc.) ▪ Participate in spill response as a member of cleanup crew under the direction of the Spill Response Team
Emergency Response/Spill Response Team	▪ Report to the site of the spill ▪ Assume primary role for first aid (Emergency Response Team) ▪ Stop or contain the spill ▪ Remove all ignition sources ▪ Take appropriate response measures – deploy booms, absorbents, and other equipment and materials as required ▪ Continue cleanup as directed by Vice President and General Manager or Environmental Manager
Area Manager or Vice President and General Manager	▪ Report to the site of the spill or Incident Command Centre (if Emergency Response Team has been deployed) ▪ Coordinate initial and ongoing response efforts ▪ Ensure source of spill has stopped and contain spill ▪ Record spill information ▪ Ensure a log book of all spill or unauthorized discharge occurrences is maintained ▪ Ensure coordination of equipment and personnel as needed ▪ Oversee the cleanup operation until it is satisfactorily completed ▪ Decide with the Environmental Manager if mobilization of additional equipment, resources or personnel is warranted
Environmental Manager / Designate	▪ Report to the site of the spill ▪ In accordance with reporting thresholds, report the spill to the Yukon 24-Hour Spill Report Line, Energy Mines and Resources – Client Services and Inspections, and the First Nation of Na-Cho Nyak Dun Lands and Resources Department. ▪ Ensure timely response and cleanup of spill site and impacted areas

Position	Responsibilities
	▪ With the Area Manager, decide if additional equipment, resources or personnel is required for containment and remedial activities ▪ Notify senior management ▪ With the Vice President and General Manager and senior management, discuss and implement additional external reporting if it is required ▪ Oversee completion and distribution of Spill Report within the 10-day reporting period ▪ Ensure investigation identifies measures to prevent similar spills
Chief Operations Officer / Designate	▪ Communicate with the media for large spills when required ▪ Ensure that all press releases are accurate and in accordance with policy ▪ Make financial decisions on major expenses during large spill response ▪ Oversee preventative measures to ensure risk of a similar incident is mitigated

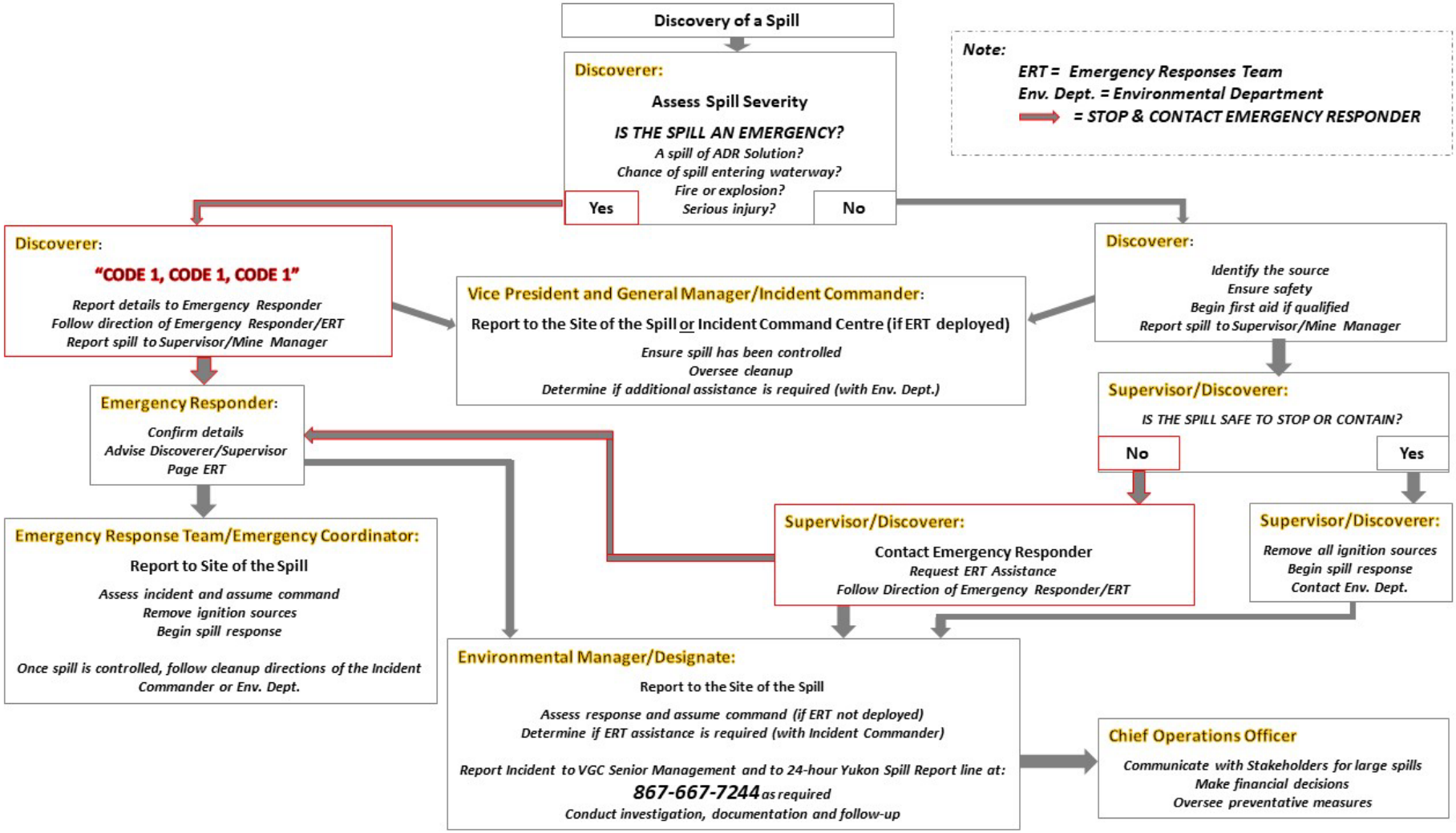


Figure 3.2-1: Spill Response Procedure

3.3 CONTAINMENT AND CLEANUP PROCEDURES

Containment methods for spills vary depending on the substance, size of the spill, location (inside buildings or outside), terrain and soil type, proximity to watercourses, climatic conditions and the availability of equipment and personnel.

Spill containment and response steps for each substance that could be spilled are summarized in Table 3.3-1.

Table 3.3-1: Spill Containment Procedures by Substance

Substance Name	Substance Type	TDGA Class	PPE required for Spill Response	Cleanup or disposal method
Caustic Soda Pels	Corrosives	8	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	Approach release from upwind. Prevent entry into water courses or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container.
Ferric Chloride	Corrosives	8	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	Approach release from upwind. Prevent entry into water courses or confined areas. Avoid dust generation. Cover drains. Collect, bind, and pump off spills. Take up dry.
High Calcium Quicklime	Corrosives	8	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	Small spill - Move containers from spill area. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor or reuse in process. Large Spill - Move containers from spill area. Do not use water on bulk material spills. Approach release from upwind. Prevent entry into water courses or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Dispose of via a licensed waste disposal contractor or reuse in process.
Hydrochloric Acid	Corrosives	8	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions. Take up with liquid-absorbent and neutralizing material. Dispose of properly. Clean up affected area.
Hydrogen Peroxide	Corrosives	8	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	Ventilate area of release. Remove all sources of ignition. Stop leak if you can do so without risk. Dike for water control. Contain and absorb spilled liquid with non-combustible, inert absorbent material (e.g., sand), then place absorbent material into a container for disposal.
Lafarge Hydrated Lime	Corrosives	8	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	Recover the product by vacuuming, shoveling or sweeping. Transfer spilled material to a suitable container for disposal. Cautiously neutralize spilled solid. Avoid actions that cause dust to become airborne during clean-up such as dry sweeping or using compressed air. Use HEPA vacuum or thoroughly wet with water to clean-up dust.
Newtrol C	Corrosives	8	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	No description in sds

Substance Name	Substance Type	TDGA Class	PPE required for Spill Response	Cleanup or disposal method
Nitric Acid	Corrosives	8	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Sweep up and shovel into suitable containers for disposal.
Poly-Circ	Corrosives	8	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	Approach release from upwind. Prevent entry into water courses or confined areas. Soak up with inert absorbent material.
Sodium Hydroxide	Corrosives	8	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	Cover drains. Collect liquid and dilute with water, or neutralize with dilute acid solutions. Absorb with suitable materials.
Sodium Hypochlorite	Corrosives	8	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (do not store near acids - violent reactions possible). Take up with liquid-absorbent material (e.g., Chemizorb®). Dispose of properly. Clean up affected area.
Sulfamic Acid	Corrosives	8	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	Avoid generating dust. Sweep up, shovel, and containerize for disposal. Keep in suitable closed containers for disposal. Contact licensed professional waste disposal service to dispose of the material.
Sulfuric Acid	Corrosives	8	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	Soak up with inert absorbent material. Keep in suitable, closed containers for disposal
Superclean Degreaser	Corrosives	8	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	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.
Sodium Bisulfite	Corrosives	8	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	Evacuate personnel to safe areas. Sweep up and shovel and arrange disposal without creating dust. Keep in suitable closed container for disposal.
Fortan Extra	Explosives	1.5	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	Contain with dikes or absorbents to prevent migration and entry into streams. Absorb and contain with inert material. Place contents in suitable container for disposal. As an immediate precautionary measure, isolate spill or leak area in all directions. Use only non-sparking tools.
Brakleen	Flammable Aerosol	2.1	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	Shut off flow and remove ignition sources if safe to do so and evacuate area.
Acetylene Gas	Flammable Gas	2.1	Insulated gloves, safety glasses, respirator	Shut off flow and remove ignition sources if safe to do so and evacuate area. Consult supplier if container needs disposal.
Propane	Flammable Gas	2.1	Insulated gloves, safety glasses, respirator if there is a possible of oxygen reduction (confined spaces with poor ventilation)	Shut off flow and remove ignition sources if safe to do so and evacuate area. Consult supplier if container needs disposal.
Wire Rope Lubricant	Flammable Gas	2.1	Chemical-resistant impervious gloves, safety	Shut off flow and remove ignition sources if safe to do so and evacuate area. Consult supplier if container needs disposal.

Substance Name	Substance Type	TDGA Class	PPE required for Spill Response	Cleanup or disposal method
			glasses, respirator if ventilation is inadequate	
Diesel Fuel	Flammable Liquid	3	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	Approach from upwind and contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.
Gasoline, Unleaded	Flammable Liquid	3	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	Approach from upwind, contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.
Gas Line Antifreeze	Flammable Liquid	n/a	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	Ventilate the area. Use only non-sparking tools and equipment in the clean-up process. Contain and absorb spilled liquid with non-combustible, inert absorbent material (e.g. sand), then place absorbent material into a container for later disposal. Contaminated absorbent material may pose the same hazards as the spilled product. Notify the appropriate authorities as required. Do not use combustible absorbents, such as sawdust.
Jet Fuel A and B	Flammable Liquid	3	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate	Approach from upwind, contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.
Windshield Wash	Flammable Liquid	3	Chemical-resistant impervious gloves, safety glasses, respirator if ventilation is inadequate.	Small spills: soak up with inert absorbent material and scoop into containers. Large spills: prevent contamination of waterways. Dike and pump into suitable containers. Clean up residual with absorbent material, place in appropriate container and flush with water.
Brake Fluid DOT3	Lubricating Oil	n/a	Chemical-resistant gloves, safety glasses.	Approach from upwind, contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.
CAT Hydraulic Oil	Lubricating Oil	n/a	Chemical-resistant gloves, safety glasses.	Approach from upwind, contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.
Chevron sup. Motor Oil SAE 30, 40, 10W-40, 20W-50	Lubricating Oil	n/a	Chemical-resistant gloves, safety glasses.	Approach from upwind, contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.
Compressor Oil	Lubricating Oil	n/a	Chemical-resistant gloves, safety glasses.	Approach from upwind, contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.
Copper Anti-sieze Lubricating Compound	Lubricating Oil	n/a	Chemical-resistant gloves, safety glasses.	Prevent dust cloud. Cover liquid spill with sand, earth or other non-combustible absorbent material. With clean shovel place material into clean, dry container and cover loosely; move containers from spill area. Take up with sand or other non-combustible absorbent material and place into containers for later disposal. Cover powder spill with plastic sheet or tarp to minimize spreading.

Substance Name	Substance Type	TDGA Class	PPE required for Spill Response	Cleanup or disposal method
DELO 400 LE Synthetic SAE 5W-40	Lubricating Oil	n/a	Chemical-resistant gloves, safety glasses.	Approach from upwind, contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.
Dexron Gear Oil	Lubricating Oil	n/a	Chemical-resistant gloves, safety glasses.	Approach from upwind, contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.
Duron-E 15W-40	Lubricating Oil	n/a	Chemical-resistant gloves, safety glasses.	Approach from upwind, contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.
Hydraulic Fluid 0D-15-10	Lubricating Oil	n/a	Chemical-resistant gloves, safety glasses.	Approach from upwind, contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.
NULON 85W-140 Limited	Lubricating Oil	n/a	Chemical-resistant gloves, safety glasses.	Approach from upwind, contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.
Petro Canada ATF D3M	Lubricating Oil	n/a	Chemical-resistant gloves, safety glasses.	Approach from upwind, contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.
Power Steering Fluid	Lubricating Oil	n/a	Chemical-resistant gloves, safety glasses.	Approach from upwind, contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.
Two Cycle Motor Oil	Lubricating Oil	n/a	Chemical-resistant gloves, safety glasses.	Approach from upwind, contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.
Winter Treat Plus	Lubricating Oil	n/a	Chemical-resistant gloves, safety glasses.	Absorb and/or contain spill with inert material (sand, vermiculite or other appropriate material), then place in suitable container. Do not flush into surface water. Wear recommended personal protective equipment. Sweep or shovel spills into appropriate container for disposal. Provide ventilation. Spilled material may present a slipping hazard.
Mobil Antifreeze	Misc. Product	n/a	Chemical-resistant gloves, safety glasses.	Approach from upwind, contain and collect spillage with sorbents from spill kits and/or sand and gravel.
HD Expert Premium Antifreeze/Coolant	Misc. Product	9	Chemical-resistant impervious gloves, safety glasses	Approach from upwind, contain and collect spillage with sorbents from spill kits and/or sand and gravel. Pump free liquid into containment. Arrange for transport of material to an approved facility.
Lead	Misc. Product	9	Gloves, safety glasses	Mechanically recover the product. Pick-up the material. Take collected spill to manufacturer/competent authority. Dispose of materials or solid residues at an authorized site.
Loctite 271 HSTL	Misc. Product	9	Chemical-resistant gloves, safety glasses.	Remove all sources of ignition. Evacuate and ventilate spill area; dike spill to prevent entry into water system. Soak up with inert

Substance Name	Substance Type	TDGA Class	PPE required for Spill Response	Cleanup or disposal method
				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.
Oxygen	Non-Flammable Gas	2.2	Insulated gloves, safety glasses	Allow gas to dissipate. Consult supplier if container needs disposal.
Ammonium Nitrate	Oxidizing Substance	5.1	Chemical-resistant gloves, safety glasses.	Sweep up and shovel into suitable containers for disposal. Keep away from clothing and other combustible materials. Avoid dust formation.
Sodium Borate, Anhydrous	Oxidizing Substance	5.1	Chemical-resistant gloves, safety glasses.	Sweep up or vacuum up spillage and collect in suitable container for disposal. Avoid dust formation. Keep in suitable, closed containers for disposal.
Sodium Nitrite	Oxidizing Substance	5.1	Chemical-resistant gloves, safety glasses.	Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions. Clean up affected area. Avoid generation of dusts.
Sodium Cyanide	Toxic Substance	6.1	PVC or butyl rubber gauntlet-type gloves, gas type chemical splash goggles and full face shield, PVC overalls or jacket and pants and butyl rubber boots. Canister air respirator if HCN level is between 11 and 50 mg/m^3, self-contained breathing apparatus if HCN level exceeds 50 mg/m^3.	Evacuate unprotected personnel upwind and out of danger. If safe to do so, prevent further release of sodium cyanide. Shut off all possible sources of ignition. Stay upwind of any dust or mist released. Increase ventilation and allow any dust or mist released to vent to a safe area. Restrict access to spill site. Avoid, or minimise, the use of water on spilt solid or dust. Using a shovel/front end loader as required, recover as much material as possible into dedicated drums, and where possible return collected spills to process, or manufacturer. If possible, contain the surface area by bunding with sand, earth or vermiculite. For a large spill notify Fire and Rescue Services then CSBP Emergency Response.

Various practical methods of containment and recovery have been proven and effective for use in northern climates on land, snow ice or in open water. These methods are summarized in Table 3.3-2.

Table 3.3-2: Spill Containment Procedures by Location

Spill location	Response Actions	Containment Methods	Limitations	Required resources
Snow and Ice	▪ Stop spill source ▪ Eliminate ignition sources ▪ Block entry to waterways with snow dyke or other barrier ▪ Trench or ditch to intercept or contain spill ▪ Compact snow around spill to increase retention ▪ Contain or collect contaminated snow	Snow or Ice dykes	▪ Best suited for flat areas in winter ▪ Requires sufficient snow or ice	▪ Shovels ▪ Heavy equipment
		Snow or Ice trench	▪ Requires sufficient snow or ice ▪ Only applicable when ice is >1m thick ▪ Generally requires mechanical equipment for construction on ice	▪ Shovels ▪ Heavy equipment ▪ Ice chain saws
		Sorbent berm	▪ Requires sufficient, readily available sorbent material ▪ Impractical for larger spills	▪ Sorbents

Spill location	Response Actions	Containment Methods	Limitations	Required resources
Land	▪ Stop spill source ▪ Eliminate ignition sources ▪ Block entry to waterways with sand or gravel dyke ▪ Trench or ditch to intercept or contain spill ▪ Deploy sorbents ▪ Recover liquids with pumps or vacuum equipment	Sand or gravel dykes	▪ Best suited for flat areas ▪ Requires sufficient, easily excavated material if hand tools are being used	▪ Shovels ▪ Heavy equipment ▪ Sandbags or liner material if available ▪ Pump out equipment
		Land trench	▪ Can be difficult to excavate if soil is frozen ▪ Not conducive to areas with shallow bedrock	▪ Shovels ▪ Heavy equipment ▪ Pump out equipment
		Sorbent berm	▪ Requires sufficient, readily available sorbent material ▪ Impractical for larger spills	▪ Sorbents
Open Water	▪ Stop spill source ▪ Eliminate ignition sources ▪ Deploy sorbent booms or containment booms to control spread of substance	Sorbent boom	▪ Requires sufficient, readily available sorbent material ▪ No suitable for fast moving watercourses	▪ Sorbents
		Containment boom	▪ Requires sufficient, readily available sorbent material	▪ Sorbents

An effective way of controlling spills on land is through the construction of trenches or berms using sand and gravel. Small spills may be contained manually using shovels. More substantial spills may require the use of heavy equipment to dig trenches or place berm material.

Since snow has absorbent and containment properties, snow can be very effective for containing spills. Liquid spills typically become immobile within the snow pack and can be easily removed for transport and disposal. Snow will be used to its advantage in the construction of snow dykes, and whenever possible, the snow pack will be left in place to avoid contaminating the underlying substrate. For spills on ice, the methods of containment are similar to those used on land.

Spills occurring on open water (e.g., water retention ponds) will spread very rapidly, and therefore, initial preventative measures such as those described in Section 6.2 will be taken to minimize the potential for spills to enter open water. In the event of a petroleum product spill on open water, booms will be deployed immediately to limit the spread of the product and to facilitate recovery, by absorbents or by pumping.

3.4 OFF-SITE RESOURCES

With the exception of medical aid incidents, external resources will be authorized only by the Vice President and General Manager or designate, or those with a higher level of responsibility. Key municipal, territorial and federal services and contact numbers are provided in Table 3.4-1.

Table 3.4-1: Municipal, Territorial and Federal Services and Contact Numbers

Name	Office	Location
Canutec – Emergency Response for TDG spill	**613-996-6666** or ***666 on a cellular phone**	Ottawa

Name	Office	Location
Mayo Nursing Station	867-996-4444	Mayo
Mayo Fire & Rescue	867-996-2222	Mayo (Volunteer Responders)
Mayo RCMP	Emergency: 867-996-5555 Admin: 867-996-2677	Mayo
Whitehorse Regional Hospital - Emergency and Admissions	867-393-8700	Whitehorse
Environment Yukon Contaminated Sites Coordinator – Cedric Schilder	867-667-8816	Whitehorse
Environment Yukon Conservation Officer – Sean Cox	867-996-2202	Mayo
Environment Yukon Conservation Officer Services Branch	867-667-8005	Whitehorse
First Nation of Na-cho Nyäk Dun	867-996-2265	Mayo
Environment Yukon Fish and Wildlife Branch	867-667-5715	Whitehorse
Fisheries and Oceans Canada	867-393-6722	Whitehorse
Yukon Energy Corporation	867-996-2387	Mayo
Yukon Energy Corporation	1-800-676-2843	After hours Whitehorse
Yukon Workers' Compensation Health and Safety Board, general Occupational Health and Safety Officer, Occupational Health & Safety Branch	867-667-5450	Whitehorse
Yukon Workers' Compensation Health and Safety Board 24-Hour Emergency Line for Reporting Serious Workplace Incidents and Injuries	867-667-5450	Whitehorse
Canadian Wildlife Services (CWS) Pacific and Yukon Region	1-800-668-6767	Delta, BC
TIPP (Turn in Poachers and Polluters)	1-800-661-0525	Whitehorse, YT

3.5 FIRE SUPPRESSION

The Fire Response Procedure in the Emergency Response Plan must be implemented in the event of a fire.

Fire suppression equipment is located at all hazardous materials storage, transfer and dispensing areas. If a spill of a flammable substance occurs and is ignited, firefighting efforts may be required prior to spill containment and cleanup. Personnel will be made aware of substance specific dangers prior to conducting fire suppression activities.

Any individual discovering a fire is responsible for attempting to control it and notifying his or her supervisor (Note: Any attempt to control the fire should be made without exposing oneself to risk or injury).

An individual should never enter a smoke-filled environment without self-contained breathing apparatus, appropriate protective clothing and proper training. If a fire is not immediately extinguished and poses an active threat to human health or the environment, then a 'Code 1' call that describes the size and location of the fire must be activated. Immediately notify the Vice President and General Manager in such an event.

In the event that the Vice President and General Manager deems that site wide evacuation is necessary, all personnel must gather at the appropriate muster station so that transport from the site can be arranged, and all mine personnel can be accounted for.

The Vice President and General Manager or designate must:

- Take and remain in charge of firefighting activities until the fire is extinguished
- Ensure all personnel not involved are evacuated to a safe zone and instructed to be on standby for deployment on firefighting duties
- Identify all fire extinguishers used in the firefighting effort and ensure they are serviced, tested, re-charged, and returned for re-use.

3.6 CONTAMINATED SOIL

Sampling procedures for material potentially contaminated by a spill and analytical methods for contamination locations and clean-up areas will adhere to the requirements of the Yukon Environment Protocol for the Contaminated Sites Regulation (CSR) under the *Environmental Act*, specifically Protocol No. 3: Soil Sampling Procedures at Contaminated Sites and Protocol No. 5: Petroleum Hydrocarbon Analytical Methods and Standards.

Hazardous materials that cannot be re-used or recycled locally will be handled in accordance with VGC's Solid Waste and Hazardous Materials Management Plan.

VGC operates and maintains a land treatment facility (LTF) authorized under Yukon Environment Permit No: 24-047. The facility is utilized for the progressive treatment and remediation of potentially hydrocarbon and coolant contaminated soils. The land treatment facility is located adjacent to the waste management and incinerator area and consists of a bermed, geo-membrane lined cell with access apron and is sloped such that run-off from the area is contained and treated prior to release to the receiving environment as required.

Hydrocarbon and coolant contaminated soils are stored within the land treatment facility and remediated by regular tilling (aeration) and standard northern bioremediation practices. Runoff from the area surrounding the facility that may come into contact with potentially contaminated materials is directed towards the lined LTF and treated via an oil water separator prior to discharge to ground. Remediation treatment will occur in summer months only.

Soils are tested for contaminant concentrations prior to treatment in accordance with the characterization sampling protocols of the CSR.

3.6.1 Confirmatory Soil Sampling

For spills to ground that require removal of potentially contaminated materials, confirmatory soil sampling is conducted according to Protocol No. 3: Soil Sampling Procedures at Contaminated Sites of the CSR.

Following excavation of contaminated material, the floor and walls of the excavation must be sampled and analyzed to confirm that no contaminated material remains at that location or to identify any contaminated material remaining at the removal location. A minimum of 5 samples must be taken from the faces of the excavation: one from each wall and one from the excavation floor. Depending on the extent of excavation, additional samples are required as follows: one sample per 10 metres (m) running length and one sample per 3 m depth. If any of the characterization samples demonstrate that the excavated material is highly contaminated, one sample must be taken for each 5 m running length and for each 3 m running depth. In the case of the excavation floor, one sample must be collected for each 10 m running length and for each 10 m running width.

For shallow excavations not exceeding 0.2 m in depth, step out samples are to be collected adjacent to each excavation boundary in lieu of wall samples at a frequency of one sample for each 10 m running length or for each 5 m running length if any of the characterization samples demonstrate that the excavated material is highly contaminated. Floor samples are to be collected as outlined above.

When conducting confirmatory sampling at large sites, at least the first five confirmatory samples for each contaminant plume at any site must be analyzed for VPH, LEPH, HEPH, BTEX + Styrene, and all regulated PAHs. After that, only every tenth confirmatory sample needs this analysis; the remainder can be analyzed for VHS6-10, EPHS10-19, and EPHS19-32.

Full protocol sampling as described above is not always applicable. Although the Yukon CSR policy does not always default to no sampling, discussions between Yukon Environment, CMI-Major Mines, and VGC Environmental Manager and Superintendent (November 20, 2020) confirmed that minor spills resulting in less than 1 m^3 of excavated materials do not require confirmatory samples. An excavation volume of >1 m^3 will trigger the full protocol sampling as described above. The CMI Inspector will be informed on a regular basis of non-reportable spills exceeding 1 m^3 with details and results of the confirmatory sampling.

3.6.2 Characterization Sampling

Characterization sampling is required for all potentially contaminated materials prior to deposit and treatment in the site LTF. Ex-situ sampling of materials may be conducted for initial characterization purposes in situations where emergency response is required (i.e., immediate excavation of recent spills). Ex-situ sampling for characterization purposes will be the standard at the site based on protocols for immediate spill response and contaminant removal, in-situ will not occur unless historical spills are identified.

When characterizing contaminated material, at least the first five samples for each contaminant plume must be analyzed for BTEX + Styrene and PAHs. If more than five samples are taken from a single plume, the remainder can be analyzed only for VHS6-10, EPHS10-19, and EPHS19-32. The samples analyzed for BTEX + Styrene and PAHs should be taken from the area thought to be the most contaminated.

In addition, and in accordance with the LTF permit, characterization sampling will occur at a rate of one sample per 50 m^3 for material intended to be placed in the LTF. These sample may represent combined contaminated materials from different spills at the site, as typically spills on site generate much less than 50 m^3 of material requiring treatment. Hydrocarbon and glycol contaminated materials will continue to remain separated within the LTF.

4 INTERNAL AND EXTERNAL REPORTING

Any spill for which external reporting is required, as described in Section 2.2, will be reported to the 24-hour Yukon Spill Report Line. The reporting sequence below will be followed to allow for an efficient and effective response, completion of an accurate spill report, and timely notification of VGC management, government agencies, and First Nations.

- The First Observer (the person who discovers the spill) will identify the source and report to his/her direct supervisor.
- The supervisor will gather spill information and provide to the Environmental Manager or designate.
- The Environmental Manager or designate will record the information regarding the spill and forward it to the Vice President and General Manager.
- The Environmental Manager or designate will report the spill to VGC senior management and the 24-hour Spill Report Line and the Department of Energy, Mines and Resources - Client Services and Inspections, and to the Yukon Water Board Waterline online registry, as well as overseeing the completion and distribution of spill-related information.
- The Environmental Manager and senior management will determine responsibility for reporting to the FNNND within 24 hours as required.

5 TRAINING REQUIREMENTS

All personnel on site involved with the handling, use, storage and transportation of hazardous substances will be trained in the procedures for responding to and reporting of spills. Training topics will include:

- Workplace Hazardous Materials Information System (WHMIS) – renewed every 3 years and mandatory for all new hires
- Transportation of Dangerous Goods
- Hazmat training will be delivered to Emergency Response Team members

The following spill related topics will be covered during site orientation for all relevant personnel:

- Responsibilities of personnel
- Causes of spills and preventative measures
- Control, containment and cleanup methods for various spill locations
- Emergency contact information and location
- Storage and disposal of materials used on site
- Reporting requirement and procedure
- Overview of Spill Response Plan
- PPE requirements for handling potential spill materials

Additional training requirements related to cyanide handling and management, as well as spill-related clean up procedures are detailed in the Cyanide Management Plan.

6 BEST MANAGEMENT PRACTICES

VGC will incorporate best management practices (BMPs) into all work procedures and plans. BMPs relating to spills are outlined below.

6.1 HEALTH AND SAFETY

VGC will implement a system of workplace inspections to ensure that procedures put in place to prevent incidents and accidents relating to hazardous materials are followed. This system will identify levels of hazard, which will trigger immediate work stoppages, and levels of hazards, which will trigger notification of management. This system will ensure that work does not continue with inadequate provisions for health and safety and those personnel are empowered to address unsafe or potentially unsafe scenarios.

Specifically, in relation to hazardous materials, the following will be provided:

- Engineering controls and engineered hazardous material handling mechanisms to ensure that manual handling and ergonomic issues do not exacerbate the risk associated with working with hazardous materials.
- Monitoring systems for detection of hazardous solution and gaseous leaks.
- PPE designed for use in handling the various types of hazardous materials.
- Communication systems with emergency response capabilities.
- SDS for all hazardous materials will be readily available anywhere these products are stored or used.
- A copy of the SDSs will be accessible in the site offices.
- Emergency contact information will be posted and kept current.

6.2 SPILL PREVENTION

All site personnel will receive WHMIS training and will be trained in proper handling, spill response, and PPE use specific to their job tasks.

No lubrication, refueling or maintenance of equipment is permitted to occur within 30 m of watercourses or wetlands. All fueling and lubrication of equipment will be conducted in a manner that minimizes the possibility of spills with containers, hoses and nozzles kept free of leaks and all fuel nozzles equipped with functional automatic shutoffs.

Sodium cyanide will be mixed with water in a well-ventilated area and maintained at a high pH to prevent the evolution of hydrogen cyanide gas.

The following mitigation measures will be implemented to minimize the potential for transportation incidents that could result in a hazardous substance spill:

- VGC will work with the Department of Highways and Public Works to ensure the access road is properly maintained.
- Speed limits will be strictly enforced for all Project vehicles.

- VGC will ensure trucking and hauling contractors have appropriate driver training, radio contact capabilities, properly maintained vehicles, and spill response capabilities.
- VGC will ensure all hazardous materials are transported and handled in accordance with the *Transportation of Dangerous Goods Act.*
- Signage will be posted along the access road to the Project to ensure non-Project traffic is aware of radio protocols.
- Wildlife migration corridors and crossings along the access road will be identified and signage provided in high-risk areas.
- Wildlife crossing and escape points will be plowed in the access road snow banks.
- VGC will have on-site personnel with emergency first aid training to provide primary care in the event of an accident, and will implement the appropriate components of the Emergency Response Plan for the Project.

6.3 SPILL RESPONSE

All site personnel will be familiar with VGC's Spill Response Plan, and their duties and responsibilities. Storage sites will be well labeled, and SDS are accessible in storage areas. This Spill Response Plan will be kept current, and made available to all personnel. VGC will ensure that suitable spill kits are used for spill response and that personnel are trained in using the spill response equipment.

6.4 STORAGE OF HAZARDOUS MATERIALS

The Solid Waste and Hazardous Materials Management Plan, describes the method of storage of hazardous materials for the Project. VGC will ensure that all hazardous materials are stored with secondary containment structures, either in the form of concrete foundations with curbed sides or double walling of the primary container. Hazardous material storage areas will be well labeled and access to the storage areas will be restricted.

Spill response equipment will be available at hazardous materials storage locations and will be inventoried, maintained and inspected monthly. Signage will be clearly visible in storage, dispensing and transfer areas. Fire extinguishers and/or fire suppression systems will be located at all hazardous material storage locations. Fuel and lubrication materials will be stored a minimum of 30 m from natural watercourses.

6.5 FUEL TRANSFER PROCEDURES

All personnel responsible for transfer, storage, transportation or handling of fuel will be trained in safe work practices for fuel and lubricants.

Caches of spill response materials will be placed along the South McQuesten Road and the Haggart Creek Road, including at the Haggart Creek crossing. Project personnel will have appropriate emergency response and spill contingency training and knowledge; equipment, materials and procedures will be maintained to limit consequences of releases of fuel or oil to the terrestrial or aquatic environment through prompt containment and clean-up.

6.5.1 Spill Protection and Prevention

Spill prevention will be undertaken through ensuring that accepted standard operating procedures are employed for the safe and secure transfer of hazardous materials from product transporters and within the Project site. Hazardous materials will be stored in areas that have containment structures such as concrete foundations with curbed sides. Hazardous material handling will be undertaken within the concrete foundations. Equipment handling hazardous materials will be inspected regularly and any inadequacies will be reported to maintenance personnel and repaired prior to continuation with work.

Spills will be responded to using the methods described in this Plan, according to what type of substance and what surface they occur on, as described in Section 3.3. Routine inspections and maintenance will be conducted at hazardous material storage and transfer areas. Storage areas will be kept clean through good housekeeping practices.

6.5.2 Dispensing

Storage containers will be stored properly, and will not be over filled. Operating procedures will be established to minimize the potential for fuel spills during dispensing. All personnel handling fuel will be trained on these procedures.

6.6 ROUTINE MONITORING

Monitoring and maintenance is essential in the prevention of spills, and the effective handling of potential spills.

6.6.1 Maintenance

Maintenance procedures will be posted in applicable service areas. Maintenance personnel will be trained and familiar with the procedures. Regular checks will be performed on storage and dispensing equipment to identify any potential problems. If the regular checks identify issues, repairs are to be made prior to continued use of the piece of equipment. Spill response equipment will be kept stocked and maintained, and maintenance logs will be kept.

6.6.2 Perimeter Assessment

The following outlines items that will be identified during inspection:

- Signs of leakage from storage containers, loss of material, cracks, holes etc.
- Signs of inadequacy of secondary containment structures
- Unexpected solution or gaseous emissions will be thoroughly investigated to determine the source and nature of the emissions.
- Discoloration, oily discharges or any unusual odours.

6.6.3 Hazardous Material Storage and Transfer Areas

The following outlines items that will be identified during inspection:

- Spills or stains on the ground.

- Losses of material from storage containers.
- Cracks or damage to storage containers.
- Emergency shut off systems in place, functioning and clearly marked.
- Spill kits are available, adequate and accessible.
- Procedures posted for reference, SDS are available

APPENDIX A

Assessment, Licence and Permit Requirements for Spill Prevention and Response

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Assessment, Licence and Permit Requirements for Spill Prevention and Response

Document, License or Permit	Section Number	Requirement
Final Screening Report and Recommendation: Terms and Condition of Recommendation	11	As proposed, the Proponent shall ensure a certified cyanide transporter is used and appropriate driver training, radio contact capabilities, vehicle maintenance, and emergency clean-up kits will be on trucks carrying NaCN. Furthermore, the Proponent shall ensure that emergency clean-up kits include equipment to contain NaCN as well and material to protect from, and respond to, cyanide toxicity in spill responders.
Final Screening Report and Recommendation: Terms and Condition of Recommendation	23	The proponent shall ensure that the following communication elements are in the ERP: a) Notification to management, regulatory agencies, outside response providers and medical facilities of the cyanide emergency. b) Notification to potentially affected communities of the cyanide related incident and any necessary response measures. c) Communication protocols with the media.
Final Screening Report and Recommendation: Proponent Commitments	97	SGC will implement the following to maximize road and transport safety: a) Ensure trucking/hauling contractors have appropriate driver training, radio contact capabilities, vehicle maintenance requirements, and spill response capabilities b) Ensure all hazardous materials are transported and handled in accordance with the Transport of Dangerous Goods Act and Regulations
Final Screening Report and Recommendation: Proponent Commitments	98	SGC commits to the following spill prevention and response measures: a) If there is any doubt regarding the size of a spill, material involved, and whether it is reportable, SGC will err on the side of caution and report the spill. b) Caches of spill response materials will be placed along the access road as required by the Spill Contingency Plan, including the Haggart Creek Crossing. c) Project staff will have appropriate emergency response and spill contingency training and knowledge. Equipment, materials, and procedures will be maintained to limit the consequences of releases to the environment through prompt containment and clean-up. d) Fuels, hydrogen peroxide, and other hazardous liquids will be transferred from tanker trucks to storage tanks by enclosed lines, hoses, and pumps equipped with pressure transducers and volume counters to ensure tanks cannot be overfilled. e) No lubrication, refuelling or maintenance of equipment will occur within 30 m of wetlands or watercourses. f) All fuelling and lubrication of construction equipment will be carried out in a manner that minimizes the possibility of spills. All containers, hoses, and nozzles will be free of leaks and all fuel nozzles equipped with functional automatic shut-offs. g) Where stationary equipment cannot be relocated more than 30 m from a watercourse, it will be situated in a designated area that has been bermed and lined with an impermeable barrier with a holding capacity equal to 125% of the largest tank within the berm. h) Equipment operators will be appropriately trained in spill response procedures and carry spill kits capable of handling spills on land and water.

Assessment, Licence and Permit Requirements for Spill Prevention and Response

Document, License or Permit	Section Number	Requirement
Final Screening Report and Recommendation: Proponent Commitments	110	SGC is committed to developing and implementing Environmental Management Plans with the following components: a) Spill Contingency Plan
Final Screening Report and Recommendation: Proponent Commitments	112	The ERP will include the following commitments: a) Resource inventories of personnel, equipment, first aid kits, spill kits, and clean-up materials will be maintained on-site and updated regularly. These inventories will also contain information on external resources available off-site (e.g., RCMP, fire department, other mining establishments in the vicinity). b) All staff on site will receive basic training, including environmental awareness, general emergency response, spill contingency measures, and communication procedures. Truck drivers transporting hazardous materials will also receive additional training on spill response, hazardous material handling, and emergency driving techniques. All security personnel will be trained in first aid.
Final Screening Report and Recommendation: Proponent Mitigations	26	Prevent and respond to all potential spills.
Final Screening Report and Recommendation: Proponent Mitigations	59	Fuel, hazardous material and explosives will be managed according to industry standards including; storage in appropriate containers; containment areas sized to hold the larger of 110% of the largest tank or 10% of the total maximum volume of all tanks in the facility; and storage of explosives in separate buildings away from the rest of the mine activities.
Quartz Mining License QML-0011	9.1	The Licensee must immediately implement the relevant component of the environmental management system if a spill or release of dangerous or hazardous substances or materials occurs at site.
Quartz Mining License QML-0011 Schedule B		Plans to be submitted for approval as approved plans – Spill Contingency Plan
Quartz Mining License QML-0011 Schedule D		Annual reporting requirements – a summary of spills and accidents that occurred at the site and measures taken respond to any spills or accidents
Class 4 Mining Lands Approval LQ00562	1.8	All spills must be reported immediately to the 24-Hour Yukon Spill Reporting Line (867) 667-7244 and to the Northern Tutchone Mining Inspections Officer (Compliance, Monitoring and Inspections) at (867) 996-2343.
Class 4 Mining Lands Approval LQ00562	1.9	An operator who takes an emergency remedial measure shall, as soon as possible but not later than 10 days after taking it, send a written report to the Chief describing the duration, nature and extent of the emergency and the measures taken to respond to it.
Class 4 Mining Lands Approval LQ00562	2.5	The operator shall, with indelible marker or paint, clearly identify the owner, the contents and the date on fuel drums to establish and manage ownership and responsibility.
Class 4 Mining Lands Approval LQ00562	2.6	All fuel cache(s) must be protected with an earthen berm or suitable barrier and flagged to prevent spills resulting from accidental contact with heavy equipment. Flags should be visible above the snow pack.

Assessment, Licence and Permit Requirements for Spill Prevention and Response

Document, License or Permit	Section Number	Requirement
Class 4 Mining Lands Approval LQ00562	2.7	The location of any spills shall be clearly marked until cleanup has taken place. Location markings shall not be removed until directed in writing by an Inspector.
Class 4 Mining Lands Approval LQ00562	3.1	Debris, equipment, fuel barrels, scrap metal and other waste at the work site shall be completely disposed of, so as not to attract wildlife, by removal to an authorized disposal site at the cessation of the exploration program or prior to the expiry of the approval, whichever comes first.
Class 4 Mining Lands Approval LQ00562 Appendix B	12	If petroleum fuel storage capacity exceeds 4000 L, a secondary containment structure must be constructed. The containment structure must be made of a material impervious to petroleum products and: a) if there is a single storage tank, be of sufficient size to accommodate at least 110% of the capacity of the storage tank; or b) if there is more than one storage tank, be of sufficient size to accommodate110% of the capacity of the largest storage tank or 10% of the total capacity of all the tanks, whichever is larger.
Class 4 Mining Lands Approval LQ00562 Appendix B	13	All petroleum products, including waste petroleum products, and any other hazardous substances must be stored in a secure fashion no less than 30m from the ordinary high water mark of any water body.
Class 4 Mining Lands Approval LQ00562 Appendix B	14	All petroleum products, including waste petroleum products, and any other hazardous substance, must be transferred and handled without spillage.
Class 4 Mining Lands Approval LQ00562 Appendix B	15	All petroleum products and any other hazardous substances must be removed from the site of the exploration program when the program ceases.
Class 4 Mining Lands Approval LQ00562 Appendix B	16	All waste petroleum products and any other special waste, as defined in the *Special Waste Regulations*, generated in the course of carrying out the exploration program must be disposed of in accordance with the *Special Waste Regulations* when the program ceases.
Class 4 Mining Lands Approval LQ00562 Appendix B	17	A spill contingency plan for petroleum products and other hazardous waste must be prepared and posted in the camp and at all fuel handling locations used in carrying out the exploration program.
Class 4 Mining Lands Approval LQ00562 Appendix B	18	All spill clean-up equipment and material must be maintained in a state of readiness sufficient at all times to contain and clean-up any hazardous material spills.
Class 4 Mining Lands Approval LQ00562 Appendix B	19	If a spill occurs, the spill contingency plan must be immediately implemented and notice given to the 24-hour Yukon Spill Report Line. As soon as practicable, an inspector must be contacted. Whatever remedial action is required to clean-up the spill and reclaim the affected land and water must be taken.
Type B Water Use Licence QZ16-006	19	Where a spill or an unauthorized discharge occurs, that is of a reportable quantity under the Yukon Spills Regulations, the Licensee shall immediately contact the 24-hour Yukon Spill Report number, (867) 667-7244 and implement the Spill Contingency Plan. A detailed written report on any such event including, but not limited to, dates, quantities, parameters, causes and other relevant details and explanations, shall be submitted to the Board not later than 10 days after the occurrence.

Assessment, Licence and Permit Requirements for Spill Prevention and Response

Document, License or Permit	Section Number	Requirement
Type B Water Use Licence QZ16-006	20	The Licensee shall apply the relevant procedures in the Spill Contingency Plan. The Licensee shall review the Spill Contingency Plan annually and shall provide a summary of that review, including any revisions to the plan, as a component of the annual report.
Type B Water Use Licence QZ16-006	21	The Licensee shall maintain a log book of all spill or unauthorized discharge occurrences, including spills that are less than the reportable quantities under the Yukon Spills Regulations. The log book shall be made available at the request of an Inspector. The log book shall include, but not necessarily be limited to the: a) date and time of the spill or unauthorized discharge occurrence; b) substance spilt or discharged; c) approximate amount spilt or discharged; d) location of the spill; e) distance between the spill or discharge and the nearest Watercourse; and f) remedial measures taken to contain and clean-up the spill area or to cease the unauthorized discharge.
Type B Water Use Licence QZ16-006	22	The Licensee shall include a summary of all spills or unauthorized discharges that occurred during the year reported, as part of the annual report.
Type B Water Use Licence QZ16-006	23	All personnel shall be trained in procedures to be followed and the equipment to be used in the containment of a spill.
Type B Water Use Licence QZ16-006	24	Prior to the commencement of construction. the Licensee shall update the Spill Contingency Plan and provide the updated plan to the Board.
Type B Water Use Licence QZ16-006	25	The Spill Contingency Plan shall be posted on site for the duration of the works.
Type B Water Use Licence QZ16-006	26	Ten days prior to construction, the Licensee shall submit material safety data sheets to the Board for all petroleum products and/or hazardous materials that are to be present during this undertaking.
Type B Water Use Licence QZ16-006	27	Fuel, lubricants, hydraulic fluids, coolants and similar substances shall be stored and/or transferred a minimum of 30 metres from the Natural Boundary of any Watercourse, in such a way that said substances are not deposited in or allowed to be deposited in waters.
Type A Water Use Licence QZ14-041-1	127	Where a spill or an unauthorized discharge occurs, that is of a reportable quantity under the Yukon Spills Regulations, the Licensee must immediately contact the 24-hour Yukon Spill Report number, (867) 667-7244 and implement the Spill Contingency Plan. A detailed written report on any such event including, but not limited to, dates, quantities, parameters, causes and other relevant details and explanations, must be submitted to the Board not later than 10 days after the occurrence.
Type A Water Use Licence QZ14-041-1	128	The Licensee must apply the relevant procedures in the Spill Contingency Plan. The Licensee must review the Spill Contingency Plan annually and must provide a summary of that review, including any revisions to the plan, as a component of the annual report.

Assessment, Licence and Permit Requirements for Spill Prevention and Response

Document, License or Permit	Section Number	Requirement
Type A Water Use Licence QZ14-041-1	129	The Licensee must maintain a log book of all spill or unauthorized discharge occurrences, including spills that are less than the reportable quantities under the Yukon Spills Regulations. The log book must be made available at the request of an Inspector. The log book must include: a) Date and time of the spill; b) Substance spilt or discharged; c) Approximate amount spilt or discharged; d) Location of the spill; e) Distance between the spill or discharge and the nearest Watercourse; and f) Remedial measures taken to contain and clean-up the spill area or to cease the unauthorized discharge.
Type A Water Use Licence QZ14-041-1	130	The Licensee must include a summary of all spills or unauthorized discharges that occurred during the year reported, as part of the annual report.
Type A Water Use Licence QZ14-041-1	131	All relevant personnel must be trained in procedures to be followed and the equipment to be used in the containment of a spill.
Type A Water Use Licence QZ14-041-1	132	The Spill Contingency Plan must be posted on site for the duration of the Project.
Type A Water Use Licence QZ14-041-1	133	Fuel, lubricants, hydraulic fluids, coolants and similar substances must be stored and/or transferred a minimum of 30 meters from the Natural Boundary of any Watercourse, in such a way that said substances are not deposited in waters.

APPENDIX B

Eagle Gold Spill Report Form

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EAGLE GOLD PROJECT
SPILL RESPONSE FORM

VICTORIA GOLD CORP

FIRST OBSERVER			
Name & Company:			
Date Observed:		**Time Observed:**	
Location of Spill:	**VGC Tracking Number:**		
Distance to Waterbody:		**Photos Taken?**	☐ Yes ☐ No
Estimated Spill Volume:		**Reported to:**	
PERSON/DEPT. RESPONSIBLE FOR SPILL			
Supervisor/Investigator:			
Date of Spill:			
Substance Spilled:			
Equipment Involved:			
Volume of Contaminated Material:			
Personnel Contacted for Disposal (Name):			
Cause of Spill: (Equipment Failure, vehicle accident, foreign object, etc.)			
Spill Response Actions Taken: (Containment and/or absorbent materials used, equipment required for clean-up, Pre-trip attached, etc.)			
ENVIRONMENTAL DEPARTMENT USE ONLY			
Spill Line Tracking Number		**Reportable to Spill Hotline?**	☑ Yes ☐ No
Info Re. Spill Hotline:			
Disposal Container Labelled?	☐ Yes ☐ No	**Samples taken?**	☐ Yes ☑ No
Environmental areas affected: (Watercourse, soil, etc.):			
Method of Disposal & Further Remediation Required:			
Follow Up Required?	☐ Yes ☐ No	**Follow Up Date:**	
SIGNATURES REQUIRED FOR ALL REPORTABLE SPILLS			
Employee:		**Signature:**	
Supervisor:		**Signature:**	
Safety:		**Signature:**	
Environment:		**Signature:**	

APPENDIX C

Safety Data Sheets

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SAFETY DATA SHEET

Acetylene

Section 1. Identification

GHS product identifier : Acetylene

Chemical name : acetylene

Other means of identification : Ethyne; Ethine; Narcylen; C2H2; Acetylen; UN 1001; Vinylene

Product type : Gas.

Product use : Synthetic/Analytical chemistry.

Synonym : Ethyne; Ethine; Narcylen; C2H2; Acetylen; UN 1001; Vinylene

SDS # : 001001

Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

24-hour telephone : 1-866-734-3438

Section 2. Hazards identification

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

Classification of the substance or mixture : FLAMMABLE GASES - Category 1
GASES UNDER PRESSURE - Compressed gas

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Extremely flammable gas.
Contains gas under pressure; may explode if heated.
May displace oxygen and cause rapid suffocation.
May form explosive mixtures with air.

Precautionary statements

General : Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Fusible plugs in top, bottom, or valve melt at 98°C to 107°C (208°F to 224°F). Do not discharge at pressures above 15psig (103kpa). Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Approach suspected leak area with caution.

Prevention : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Response : Leaking gas fire: Do not extinguish, unless leak can be stopped safely. In case of leakage, eliminate all ignition sources.

Storage : Protect from sunlight. Store in a well-ventilated place.

Disposal : Not applicable.

Hazards not otherwise classified : In addition to any other important health or physical hazards, this product may displace oxygen and cause rapid suffocation.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : acetylene

Other means of identification : Ethyne; Ethine; Narcylen; C2H2; Acetylen; UN 1001; Vinylene

Product code : 001001

CAS number/other identifiers

CAS number : 74-86-2

Ingredient name	%	CAS number
Acetylene	100	74-86-2

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

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

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

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

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

Most important symptoms/effects, acute and delayed

Potential acute health effects

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

Inhalation : No known significant effects or critical hazards.

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

Frostbite : Try to warm up the frozen tissues and seek medical attention.

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

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

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

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

Specific treatments : No specific treatment.

Section 4. First aid measures

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.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

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

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Contains gas under pressure. Extremely flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and allow fire to burn. Fight fire from protected location or maximum possible distance. Eliminate all ignition sources if safe to do so.

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

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Accidental releases pose a serious fire or explosion hazard. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

Large spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Avoid breathing gas. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Use only non-sparking tools. Avoid contact with eyes, skin and clothing. Empty containers retain product residue and can be hazardous. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment.

Advice on general occupational hygiene : 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. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Eliminate all ignition sources. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F). Keep container tightly closed and sealed until ready for use. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Acetylene	**NIOSH REL (United States, 10/2016).** CEIL: 2662 mg/m³ CEIL: 2500 ppm **ACGIH TLV (United States, 3/2019). Oxygen Depletion [Asphyxiant]. Explosive potential.** **California PEL for Chemical Contaminants (*Table AC-1*) (United States). Oxygen Depletion [Asphyxiant].**

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

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.

Individual protection measures

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

Section 8. Exposure controls/personal protection

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

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

Body protection : 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. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. 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.

Section 9. Physical and chemical properties

Appearance

Physical state : Gas.

Color : Colorless.

Odor : Mild. Ethereal.

Odor threshold : Not available.

pH : Not available.

Melting point : -81°C (-113.8°F)

Boiling point : Not available.

Critical temperature : 35.25°C (95.5°F)

Flash point : Closed cup: -18.15°C (-0.67°F)

Evaporation rate : Not available.

Flammability (solid, gas) : Extremely flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and oxidizing materials.
Highly flammable in the presence of the following materials or conditions: heat.

Lower and upper explosive (flammable) limits : Lower: 2.5%
Upper: 100%

Vapor pressure : 635 (psig)

Vapor density : 0.907 (Air = 1)

Specific Volume (ft ^{3}/lb) : 14.7058

Gas Density (lb/ft ^{3}) : 0.0691

Relative density : Not applicable.

Solubility : Not available.

Solubility in water : 1.2 g/l

Partition coefficient: n-octanol/water : 0.37

Auto-ignition temperature : 305°C (581°F)

Section 9. Physical and chemical properties

Decomposition temperature : Not available.

Viscosity : Not applicable.

Flow time (ISO 2431) : Not available.

Molecular weight : 26.04 g/mole

Aerosol product

Heat of combustion : -48257522 J/kg

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

Incompatible materials : Oxidizers

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Not available.

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Section 11. Toxicological information

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

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

Inhalation : No known significant effects or critical hazards.

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

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

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

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

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Section 12. Ecological information

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Acetylene	0.37	-	low

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

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

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. 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. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1001	UN1001	UN1001	UN1001	UN1001
UN proper shipping name	ACETYLENE, DISSOLVED	ACETYLENE, DISSOLVED	ACETYLENE, DISSOLVED	ACETYLENE, DISSOLVED	ACETYLENE, DISSOLVED
Transport hazard class(es)	2.1 	2.1 	2.1 	2.1 	2.1 
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Additional information

DOT Classification : **Limited quantity** Yes.
Quantity limitation Passenger aircraft/rail: Forbidden. Cargo aircraft: 15 kg.

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2).

Explosive Limit and Limited Quantity Index
0

Passenger Carrying Vessel Index
75

Passenger Carrying Road or Rail Index
Forbidden

Section 14. Transport information

Special provisions
38

IATA : **Quantity limitation** Passenger and Cargo Aircraft: Forbidden. Cargo Aircraft Only: 15 kg.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

Clean Air Act (CAA) 112 regulated flammable substances: acetylene

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Refer to Section 2: Hazards Identification of this SDS for classification of substance.

State regulations

Massachusetts : This material is listed.

New York : This material is not listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

California Prop. 65

This product does not require a Safe Harbor warning under California Prop. 65.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

Section 15. Regulatory information

UNECE Aarhus Protocol on POPs and Heavy Metals

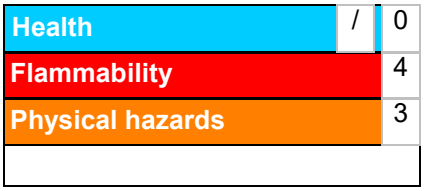
Not listed.

Inventory list

Australia	:	This material is listed or exempted.
Canada	:	This material is listed or exempted.
China	:	This material is listed or exempted.
Europe	:	This material is listed or exempted.
Japan	:	**Japan inventory (ENCS)**: This material is listed or exempted. **Japan inventory (ISHL)**: Not determined.
New Zealand	:	This material is listed or exempted.
Philippines	:	This material is listed or exempted.
Republic of Korea	:	This material is listed or exempted.
Taiwan	:	This material is listed or exempted.
Thailand	:	Not determined.
Turkey	:	This material is listed or exempted.
United States	:	This material is active or exempted.
Viet Nam	:	This material is listed or exempted.

Section 16. Other information

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



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

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

Note: The instability hazard rating for acetylene, dissolved (stabilized acetylene) is 2.

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
FLAMMABLE GASES - Category 1 GASES UNDER PRESSURE - Compressed gas	Expert judgment According to package

Section 16. Other information

History

Date of printing : 6/21/2021

Date of issue/Date of revision : 6/21/2021

Date of previous issue : 11/11/2020

Version : 2.02

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References : Not available.

Notice to reader

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

SAFETY DATA SHEET

Creation Date 05-Oct-2010 **Revision Date** 24-Dec-2021 **Revision Number** 5

1. Identification

Product Name **Ammonium nitrate**

Cat No. : **A676-212; A676-500**

CAS No 6484-52-2
Synonyms Nitric acid ammonium salt (Granular/Certified ACS)

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company
Fisher Scientific Company
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

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

Oxidizing solids	Category 3
Serious Eye Damage/Eye Irritation	Category 2

Label Elements

Signal Word
Warning

Hazard Statements
May intensify fire; oxidizer
Causes serious eye irritation

Precautionary Statements
Prevention
Keep/Store away from clothing/ other combustible materials
Take any precaution to avoid mixing with combustibles
Use only outdoors or in a well-ventilated area
Wear protective gloves/protective clothing/eye protection/face protection
Wash face, hands and any exposed skin thoroughly after handling
Wear eye/face protection
Eyes
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
Fire
Explosion risk in case of fire
In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion
Evacuate area
Storage
Store in a well-ventilated place. Keep cool
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
None identified

3. Composition/Information on Ingredients

Component	CAS No	Weight %
Ammonium nitrate	6484-52-2	>95

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Get medical attention if symptoms occur.

Inhalation Remove to fresh air. If breathing is difficult, give oxygen. Get medical attention if symptoms occur.

Ingestion Do NOT induce vomiting. Get medical attention.

Most important symptoms and effects Irritating to eyes.

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Unsuitable Extinguishing Media No information available

Flash Point	No information available
Method -	No information available
Autoignition Temperature	No information available
Explosion Limits	
Upper	No data available
Lower	No data available
Oxidizing Properties	Oxidizer
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Oxidizer: Contact with combustible/organic material may cause fire. May ignite combustibles (wood paper, oil, clothing, etc.). Thermal decomposition can lead to release of irritating gases and vapors. Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products
Nitrogen oxides (NOx). Ammonia.
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.

NFPA

Health	Flammability	Instability	Physical hazards
2	0	3	OX

6. Accidental release measures

Personal Precautions	Use personal protective equipment as required. Ensure adequate ventilation. Avoid dust formation. Avoid contact with skin, eyes or clothing.
Environmental Precautions	Avoid release to the environment. See Section 12 for additional Ecological Information.
Methods for Containment and Clean Up	Sweep up and shovel into suitable containers for disposal. Keep away from clothing and other combustible materials. Avoid dust formation.

7. Handling and storage

Handling	Wear personal protective equipment/face protection. Ensure adequate ventilation. Avoid dust formation. Avoid contact with skin, eyes or clothing. Avoid ingestion and inhalation. Keep away from clothing and other combustible materials.
Storage.	Keep containers tightly closed in a dry, cool and well-ventilated place. Do not store near combustible materials. Incompatible Materials. Strong oxidizing agents. Strong reducing agents. Strong acids. Finely powdered metals. Combustible material.

8. Exposure controls / personal protection

Exposure Guidelines	This product does not contain any hazardous materials with occupational exposure limitsestablished by the region specific regulatory bodies.
Engineering Measures	Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Solid
Appearance	White
Odor	Odorless
Odor Threshold	No information available
pH	4.5-6.0 5% aq.sol
Melting Point/Range	169 °C / 336.2 °F
Boiling Point/Range	210 °C
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	Not applicable
Specific Gravity	1.720
Solubility	190 g/100ml (20°C)
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	H4 N2 O3
Molecular Weight	80.04

10. Stability and reactivity

Reactive Hazard Yes

Stability Oxidizer: Contact with combustible/organic material may cause fire. Hygroscopic.

Conditions to Avoid Incompatible products. Excess heat. Combustible material. Avoid dust formation. Exposure to moist air or water.

Incompatible Materials Strong oxidizing agents, Strong reducing agents, Strong acids, Finely powdered metals, Combustible material

Hazardous Decomposition Products Nitrogen oxides (NOx), Ammonia

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Ammonium nitrate	LD50 = 2217 mg/kg (Rat)	LD50 > 5000 mg/kg (Rat)	LC50 > 88.8 mg/L (Rat) 4 h

Toxicologically Synergistic Products No information available

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

Irritation Irritating to eyes

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Ammonium nitrate	6484-52-2	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects Not mutagenic in AMES Test

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed No information available

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated. See actual entry in RTECS for complete information.

12. Ecological information

Ecotoxicity
Do not empty into drains.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Ammonium nitrate	Not listed	LC50: 74 mg/L/48h (Cyprinus carpio)	Not listed	EC50: 555 mg/L

Persistence and Degradability Soluble in water Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility . Will likely be mobile in the environment due to its water solubility.

Component	log Pow
Ammonium nitrate	-3.1

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No UN1942
Proper Shipping Name AMMONIUM NITRATE

Hazard Class 5.1
Packing Group III

TDG
UN-No UN1942
Proper Shipping Name AMMONIUM NITRATE
Hazard Class 5.1
Packing Group III

IATA
UN-No UN1942
Proper Shipping Name Ammonium nitrate
Hazard Class 5.1
Packing Group III

IMDG/IMO
UN-No UN1942
Proper Shipping Name Ammonium nitrate
Hazard Class 5.1
Packing Group III

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Ammonium nitrate	6484-52-2	X	ACTIVE	-

Legend:
TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Ammonium nitrate	6484-52-2	X	-	229-347-8	X	X	X	X	X	KE-01715

KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

U.S. Federal Regulations

SARA 313

Component	CAS No	Weight %	SARA 313 - Threshold Values %
Ammonium nitrate	6484-52-2	>95	1.0

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act) Not applicable

Clean Air Act Not applicable

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA Not applicable

California Proposition 65 This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Ammonium nitrate	X	X	X	X	X

U.S. Department of Transportation
Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product contains the following DHS chemicals:
Legend - STQs = Screening Threshold Quantities, APA = A placarded amount

Component	DHS Chemical Facility Anti-Terrorism Standard
Ammonium nitrate	Release STQs - 5000lb (with >0.2% combustible substances) Theft STQs - 400lb (with >0.2% combustible substances) Theft STQs - 2000lb (solid, Nitrogen >=23%)

Other International Regulations

Mexico - Grade No information available

Authorisation/Restrictions according to EU REACH

Component	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Ammonium nitrate	-	Use restricted. See item 58. (see link for restriction details) Use restricted. See item 65. (see link for restriction details)	-

https://echa.europa.eu/substances-restricted-under-reach

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Ammonium nitrate	6484-52-2	Listed	Not applicable	Not applicable	Not applicable

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Ammonium nitrate	6484-52-2	350 tonne	2500 tonne	Not applicable	Not applicable

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 05-Oct-2010
Revision Date 24-Dec-2021
Print Date 24-Dec-2021
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard

replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

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 SDS

SAFETY DATA SHEET

NAPA DOT 3 BRAKE FLUID

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Issue Date: March 5, 2014 **Revised: April 2, 2015**

Product Name: NAPA DUTY DOT 3 BRAKE FLUID
Synonyms: Brake Fluid
CAS Number: Mixture, see Section 3
Chemical Formula: Mixture
General Use: Brake Fluid
Manufacturer: Warren Unilube, Inc., 915 E. Jefferson, West Memphis, AR 72301

24-HOUR EMERGENCY NUMBER – CHEMTREC: 1-800-424-9300
WARREN UNILUBE PHONE: (800) 428-9284
FAX: (870) 400-3070

Restrictions on Use:

***FOR LABELS FOR THE GENERAL PUBLIC*:** If medical advice is needed, have product container or label at hand.

Keep out of reach of children and animals.

Read label before use.

***FOR THE INDUSTRIAL WORKER*:** Industrial use only.

SECTION 2: HAZARD(S) IDENTIFICATION

Hazard Classification:

OSHA Hazards: Target Organ Effect, Harmful by ingestion, Irritant, Teratogen, Reproductive hazard

Target Organs: Kidney, Liver, Central nervous system, Female reproductive system, Male reproductive system, Blood.

GHS Classification:

Acute toxicity, dermal (Category 5)
Acute toxicity, oral (Category 4)
Skin Irritation (Category 3)
Serious eye damage (Category 1)
Reproductive toxicity (Category 2)

Signal Word: WARNING

Hazard Statements:

H302	Harmful if swallowed
H313	May be harmful in contact with skin
H316	Causes mild skin irritation
H318	Causes serious eye damage
H361	Suspected of damaging fertility or the unborn child

Precautionary Statements:

P201	Obtain special instructions before use.
P202	Do not handle until all safety instructions have been read and Understood.
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P280	Wear eye protection / face protection.
P301 +P312	IF SWALLOWED: Call a POISON CENTER or doctor / physician immediately.
P330	IF SWALLOWED: Rinse mouth.
P312	IF ON SKIN: Call a POISON CENTER or doctor / physician if you feel unwell.
P332 + P313	If skin irritation occurs: Get medical advise / 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.
P310	IF IN EYES: Immediately call a POISON CENTER or doctor / physician.
P308 + P313	If exposed or concerned: Get medical advice / attention.

20-80% of the mixture consists of ingredients of unknown acute toxicity.

HMIS Classification

Health hazard:	1
Chronic Health Hazard	
Flammability	1
Physical hazards	0

NFPA Rating

Health hazard:	1
Fire:	1
Reactivity	0

Description of Any Other Hazards Not Otherwise Classified: none known.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENT Name:	**CAS NUMBER**	**%wt. or %V**
Triethylene Glycol Monomethyl Ether	112-35-6	5-50
Triethylene Glycol Monoethyl Ether	112-50-5	5-50
Triethylene Glycol Monobutyl Ether	143-22-6	5-50
Tetrathylene Glycol Monobutyl Ether	1559-34-8	5-20
Polyethylene Glycol	25322-68-3	5-20
Diethylene Glycol Monobutyl Ether	112-34-5	5-20
Diethylene Glycol	111-46-6	5-15
Diethylene Glycol Monomethyl Ether	111-77-3	<5
Diethylene Glycol Monoethyl Ether	111-90-0	<5
Polyalkylene Glycol Monobutyl Ether	9004-77-7	5-20
Polyalkylene Glycol Monomethyl Ether	23783-42-8	5-20
Polyalkylene Glycols	9038-95-3	5-20
Trade Secret Inhibitor Package	Trade Secret	3

3% of the composition of this material has been withheld as a trade secret.

SECTION 4: FIRST AID MEASURE

EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. If eye irritation continues or persists, get medical advice / attention.

SKIN: Wash with plenty of soap and water. If skin irritation occurs, get medical advice / attention.

INGESTION: Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

INHALATION: Remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Consult a physician.

NOTES TO PHYSICIANS OR FIRST AID PROVIDERS: Treatment should be directed at the control of symptoms and the clinical condition of the patient.

SECTION 5: FIRE-FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA: Dry chemical, foam or carbon dioxide. Water spray may be used to keep fire exposed containers cool, dilute spills to nonflammable mixtures, protect personnel attempting to stop leak, and disperse vapors.

UNSUITABLE EXTINGUISHING MEDIA: Direct water stream.

SPECIAL FIRE FIGHTING PROCEDURES: Evacuate area. Do not use direct water stream to extinguish fires. Do not release runoff from fire control methods to sewers or waterways.

UNUSUAL FIRE AND EXPLOSION HAZARDS: None known.

HAZARDOUS COMBUSTION PRODUCTS: Carbon monoxide, carbon dioxide, and unidentified organic compounds.

SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE FIGHTERS: Wear full protective clothing and NIOSH – approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive breathing mode.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: Use appropriate personal protective equipment. Avoid breathing vapors, mist or gas. Avoid contact with spilled material. Insure adequate ventilation. Remove all sources of ignition. Use non-sparking tools and equipment.

PROTECTIVE CLOTHING: Standard work uniform. Impervious gloves. Safety glasses. Personnel should increase PPE level as deemed appropriate in any given situation.

EMERGENCY PROCEDURES:

SMALL SPILLS: Contain and recover liquid when possible. Collect liquid in appropriate container or absorb with an inert material (such as vermiculite or dry sand) and place in chemical waste container. Do not use combustible materials such as sawdust for the cleanup.

LARGE SPILLS:
Containment: Shut off source of leak if safe to do so. Dike far ahead of liquid spill for later disposal. Do not allow material to enter sewers or waterways.
Cleanup: Contain and recover liquid when possible. Collect liquid in appropriate container. Absorb residue with an inert material (such as vermiculite or dry sand) and place in chemical waster container. Do not use combustible materials such as sawdust for the cleanup.

SECTION 7: HANDLING AND STORAGE

HANDLING PRECAUTIONS: May be harmful or fatal if swallowed.

STORAGE REQUIREMENTS: Store in a cool dry, ventilated area.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Controls should be such that adequate ventilation is provided.

VENTILATION: Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work place by controlling it at its source.

RESPIRATORY PROTECTION: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA / NIOSH approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or non-routine operations (e.g. cleaning spills, reactor vessels, or storage tanks), wear an SCBA. ***Warning!*** *Air purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

EYE PROTECTION: Wear protective eyeglasses or chemical safety goggles, per OSHA eye-and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with, contact lenses.

SKIN PROTECTION: Wear chemically protective gloves, boots, aprons and gauntlets to prevent prolonged or repeated skin contact.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Make emergency eyewash stations, safety / quick drench showers and washing facilities available in work areas.

WORK HYGIENIC PRACTICES: Never eat, drink or smoke in work areas. Practice good personal hygiene after using this material especially before eating, drinking or smoking, using the toilet, or applying cosmetics. Separate contaminate work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment. Discard belts and shoes that cannot be cleaned.

EXPOSURE GUIDELINES:

	OSHA PEL		ACGIH TLV		NIOSH REL		
Ingredient	**TWA**	**STEL**	**TWA**	**STEL**	**TWA**	**STEL**	**USA WEEL**
Triethylene Glycol Monomethyl Ether	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.

Triethylene Glycol Monoethyl Ether	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.
Triethylene Glycol Monobutyl Ether	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.
Tetraethylene Glycol Monobutyl Ether	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.
Polyethylene Glycol	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.	10 mg/m3
Diethylene Glycol Monobutyl Ether	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.
Diethylene Glycol	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.	10 mg/m3
Diethylene Glycol Monomethyl Ether	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.	25 ppm
Diethylene Glycol Monoethyl Ether	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.
Diethylene Glycol Monobutyl Ether	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.
Polyalkylene Glycol Monobutyl Ether	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.
Polyalkylene Glycol Monomethyl Ether	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.
Polyalkylene Glycols	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.
Inhibitor Package	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Liquid
APPEARANCE AND COLOR: Yellow to amber
ODOR: Mild
FLASH POINT: >275°F (>135°C)
UPPER / LOWER FLAMMABILITY OR EXPLOSIVE LIMITS: not available
AUTO IGNITION TEMPERATURE: not available
DECOMPOSITION TEMPERATURE: not available
VAPOR PRESSURE: not available
ODOR THRESHOLD: not available

VAPOR DENSITY (air = 1): >1
pH: 10.0 – 11.5
RELATIVE DENSITY: 8.33 – 9.02 lb/gal
SPECIFIC GRAVITY (H2O = 1 AT 4 C): 1.000 – 1.070
MELTING POINT / FREEZING POINT: not available
WATER SOLUBILITY: soluble
OTHER SOLUBILITIES: not available
INITIAL BOILING POINT AND BOILING RANGE: 480°F (248.9°C), boiling range not available
EVAPORATION RATE (BuAc = 1): <0.01
PARTITION COEFFICIENT: n-OCTANOL/WATER: not available
VISCOSITY: not available
REFRACTIVE INDEX: not available
FORMULA WEIGHT: mixture

SECTION 10: STABILITY AND REACTIVITY

REACTIVITY: none under normal handling.

STABILITY: stable at room temperature in closed containers under normal storage and handling conditions.
CONDITIONS TO AVOID (STABILITY): none known.

INCOMPATIBILITY (MATERIAL TO AVOID): none known.

HAZARDOUS DECOMPOSITION BY-PRODUCTS: Thermal oxidative decomposition can produce carbon monoxide, carbon dioxide and unknown organic compounds.

HAZARDOUS POLYMERIZATION: Hazardous polymerization will not occur.

CONDITIONS TO AVOID (POLYMERIZATION): Hazardous polymerization will not occur.

HAZARDOUS POLYMERICATION BY-PRODUCTS: Hazardous polymerization will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

SIGNS AND SYMPTOMS OF OVEREXPOSURE: Swallowing larger amounts may cause nausea and vomiting, abdominal discomfort or diarrhea. May cause dizziness and drowsiness.

ACUTE EFFECTS:

EYE CONTACT: May cause slight eye irritation. May cause slight corneal injury.

SKIN CONTACT: Brief contact is essentially nonirritating to skin.

INHALATION: At room temperature, exposure to vapor is minimal due to low volatility. Mist may cause irritation of the upper respiratory tract.

INGESTION: Toxic or fatal if ingested. For diethylene glycol, a component of this mixture, a lethal dose can be as little as two ounces. Symptoms of diethylene glycol poisoning include severe abdominal cramping, diarrhea, vomiting, sweating, confusion, cardiac abnormalities, neurological abnormalities, infrequent urination, intoxication or CNS depression. If left untreated, product will metabolize to cause metabolic acidosis, renal failure, hyperkalemia, hyponatremia, paralysis, cardiac failure or death. Seek medical attention immediately for poisoning. If ingested, DO NOT wait for symptoms to develop before getting treatment.

TARGET ORGAN EFFECTS: Product is toxic to kidneys, liver, central nervous system and heart. Metabolic products of diethylene glycol produce acidosis and organ toxicity effects.

CHRONIC EFFECTS: May cause dryness or defatting of the skin, dermatitis, or may aggravate existing skin conditions.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Various skin conditions.

ACUTE TOXICITY VALUES

Triethylene Glycol Monomethyl Ether
ORAL LD50 (rat): 11,842 mg/kg
DERMAL LD50 (rabbit): 7,441 mg/kg
INHALATION LC50 (state animal): data unavailable

Triethylene Glycol Monoethyl Ether
ORAL LD50 (state animal): data unavailable
DERMAL LD50 (state animal): data unavailable
INHALATION LC50 (state animal): data unavailable

Tetraethylene Glycol Monobutyl Ether
ORAL LD50 (rat): 5,300 mg/kg
DERMAL LD50 (rabbit): 3,505 mg/kg
INHALATION LC50 (state animal): data unavailable

Polyethylene Glycol
ORAL LD50 (state animal): data unavailable
DERMAL LD50 (state animal): data unavailable
INHALATION LC50 (state animal): data unavailable

Diethylene Glycol Monobutyl Ether
ORAL LD50 (rat): 5,660 mg/kg
DERMAL LD50 (rabbit): 2,700 mg/kg
INHALATION LC50 (state animal): data unavailable

Diethylene Glycol
ORAL LD50 (rat): 12,565 mg/kg
DERMAL LD50 (rabbit): 11,890 mg/kg
INHALATION LC50 (state animal): data unavailable

Diethylene Glycol Monomethyl Ether

ORAL LD50 (rat): >7,000 mg/kg
DERMAL LD50 (rabbit): >20,400 mg/kg
INHALATION LC50 (state animal): data unavailable

Diethylene Glycol Monoethyl Ether

ORAL LD50 (rat): 10,502 mg/kg
DERMAL LD50 (rabbit): 9,143 mg/kg
INHALATION LC50 (state animal): data unavailable

Polyalkylene Glycol Monobutyl Ether

ORAL LD50 (rat): >2,000 mg/kg
DERMAL LD50 (rat): >2,000 mg/kg
INHALATION LC50 (state animal): data unavailable

Polyalkylene Glycol Monomethyl Ether

ORAL LD50 (state animal): data unavailable
DERMAL LD50 (state animal): data unavailable
INHALATION LC50 (state animal): data unavailable

Polyalkylene Glycols

ORAL LD50 (state animal): data unavailable
DERMAL LD50 (state animal): data unavailable
INHALATION LC50 (state animal): data unavailable

LISTED CARCINOGEN:

NATIONAL TOXICOLOGY PROGRAM REPORT ON CARCINOGENS: 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.

IARC LISTED AS POTENTIAL CARCINOGEN: 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.

OSHA LISTED AS POTENTIAL CARCINOGEN: 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.

SECTION 12: ECOLOGICAL INFORMATION

DATA FROM TOXICITY TESTS ON AQUATIC AND/OR TERRESTERIAL ORGANISMS:

Triethylene Glycol Monoethyl Ether: data unavailable
Triethylene Glycol Monobutyl Ether: data unavailable

Tetraethylene Glycol Monobutyl Ether: data unavailable

Polyethylene Glycol

Fish: LC50 – Leuciscus idus (Golden orfe) <500 mg/l
Daphnia: data unavailable

Diethylene Glycol Monobutyl Ether

Fish: LC50 – Lepomis macrochirus – 1,300 mg/l – 96h
LC50 – Leuciscus idus (Golden orfe) – >1,000 mg/l – 48h
Daphnia: data unavailable

Diethylene Glycol

Fish: LC50 – Pimephales promelas (fathead minnow) – 75,200 mg/l – 96h
LC50 – Carassius auratus (goldfish) – 5,000 mg/l – 24h
Daphnia: EC50 – Daphnia magna (Water flea) - >10,000 mg/l – 24h

Diethylene Glycol Monomethyl Ether

Fish: LC50 – Lepomis macrochirus – 7,500 mg/l – 96h
Daphnia: data unavailable

Diethylene Glycol Monoethyl Ether

Fish: LC50 – Pimephales promelas (fathead minnow) – 9,650 mg/l – 96h
Daphnia: EC50 – Daphnia magna (Water flea) - >3,340 mg/l – 24h

Polyalkylene Glycol Monobutyl Ether: data unavailable

Polyalkylene Glycol Monomethyl Ether: data unavailable

Polyalkylene Glycols: data unavailable

ENVIRONMENTAL FATE: data unavailable for mixture

BIOACCUMULATION POTENTIAL: data unavailable for mixture

POTENTIAL TO MOVE FROM SOIL TO GROUNDWATER: data unavailable for mixture

OTHER ADVERS ENVIRONMENTAL EFFECTS: data unavailable for mixture

SECTION 13: DISPOSAL CONSIDERATIONS

CONTAINERS TO USE: No specific recommendations

RECOMMENDED DISPOSAL METHODS: Whatever cannot be saved for recovery or recycling should be disposed of in an approved waste facility in accordance with Federal, State/Provincial and Local requirements.

PHYSICAL AND CHEMICAL PROPERTIES THAT MAY AFFECT DISPOSAL ACTIVITIES: No specific information available.

WHENEVER POSSIBLE, MATERIAL SHOULD NOT BE ALLOWED TO ENTER SEWAGE DISPOSAL SYSTEMS.

SPECIAL PRECAUTIONS FOR LANDFILL OR INCINERATION ACTIVITIES: No specific information available.

SECTION 14: TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION (49 CFR 172.101)

PROPER SHIPPING NAME: DOT 3 Brake Fluid
DOT Non-Bulk: Not Regulated
DOT Bulk: Not Regulated

IATA

Not Dangerous Goods

IMDG

Not Dangerous Goods

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

TSCA (TOXIC SUBSTANCE CONTROL ACT): all components are listed on the TSCA Inventory

CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT): None. However, this product contains various ethylene glycols and glycol ethers which are each included as a broad category on the CERCLA Hazardous Substances list.

SARA TITLE III (SUPERFUND AMENDMENTS ANDA REAUTHORIZATION ACT): No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

311/312 HAZARD CATEGORIES:

Immediate Hazard: yes / no
Delayed Hazard: yes / no
Fire Hazard: yes / no
Pressure Hazard: yes / no
Reactivity Hazard: yes / no

313 REPORTABLE INGREDIENTS: The following components are subject to reporting levels established by SARA Title III, Section 313:

2-(2-Ethoxyethoxy) ethanol	CAS Number: 111-90-0
2-(2-methoxyethoxy) ethanol	CAS Number: 111-77-3
2-(2-Butoxyethoxy) ethanol	CAS Number: 112-34-5

CLEAN WATER ACT (CWA): None of the chemicals in this product are listed as Hazardous Substances under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

CLEAN AIR ACT (CAA): None of the chemicals in the product are listed as Hazardous Air Pollutants.

STATE REGULATIONS:

California: This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

Massachusetts:

2-(2-Methoxyethoxy) ethanol	CAS Number: 111-77-3

New Jersey:

Triethylene glycol monobutyl ether	CAS Number: 143-22-6
Polyethylene glycol	CAS Number: 25322-68-3
2-(2-Butoxyethoxy) ethanol	CAS Number: 112-34-5
Diethylene glycol	CAS Number: 111-46-6
2-(2-Methoxyethoxy) ethanol	CAS Number: 111-77-3
2-(2-Ethoxyethoxy) ethanol	CAS Number: 111-90-0

Pennsylvania:

Triethylene glycol monobutyl ether	CAS Number: 143-22-6
Polyethylene glycol	CAS Number: 25322-68-3
2-(2-Butoxyethoxy) ethanol	CAS Number: 112-34-5
Diethylene glycol	CAS Number: 111-46-6
2-(2-Methoxyethoxy) ethanol	CAS Number: 111-77-3
2-(2-Ethoxyethoxy) ethanol	CAS Number: 111-90-0

INTERNAL REGULATIONS:

Persistent Organic Pollutants (United Nations): not listed
Initial List of Prior Informed Consent Chemicals (United Nations): not listed
Ozone Depleting Substances (Montreal Protocol): not listed
Greenhouse Gases (Intergovernmental Panel on Climate Change): not listed

AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES: All components are listed.

CANADA: DOMESTIC SUBSTANCES LIST: All components are listed.

CANADA WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS): D2B - Toxic Material at >1%.

CANADIAN ENVIRONMENTAL PROTECTION AGENCY TOXICS LIST: None of the components of this mixture are listed.

EUROPEAN INVENTORY OF EXISTING COMMERCIAL CHEMICAL SUBSTANCES: This material contains components not listed on the EINECS Inventory: Polyalkylene glycols, CAS Number 9038-95-3.

NEW ZEALAND: All components are listed.

PHILLIPPINE INVENTORY OF CHEMICALS AND CHEMICAL SUBSTANCES: All components are listed.

SECTION 16: REGULATORY INFORMATION

Disclaimer: This product is FOR INDUSTRIAL USE ONLY. KEEP OUT OF REACH CHILDREN AND ANIMALS. DO NOT TAKE INTERNALLY.

Warren Unilube, Inc. believes that the information and recommendations contained herein (including data and statements) are accurate as of the date hereof. No warranty of fitness for any particular purpose, warranty of merchantability, or any other warranty expressed or implied, is made concerning the information provided herein. The information provided herein relates only to the specific product designated and may not be valid where such products is used in combination with any other materials or in any process. Further, since the conditions and methods of use of the product and of the information referred to herein are beyond the control of Warren Unilube, Warren Unilube expressly disclaims any and all liability as to any results obtained or arising from any of the product or reliance on such information.

For additional product information, please contact Warren Unilube, Inc. at (800) 428-9284.

SAFETY DATA SHEET

1. Identification

Product identifier	**Brakleen® Brake Parts Cleaner**
Other means of identification	
Product code	05151
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	Serious eye damage/eye irritation	Category 2
	Reproductive toxicity (the unborn child)	Category 2
	Specific target organ toxicity, single exposure	Category 3 narcotic effects
	Specific target organ toxicity, repeated exposure	Category 2
Environmental hazards	Hazardous to the aquatic environment, acute 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. Causes serious eye irritation. May cause drowsiness or dizziness. Suspected of damaging the unborn child. May cause damage to organs (liver, kidneys, brain, lungs) through prolonged or repeated exposure. Harmful to aquatic life.
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. Do not breathe mist or vapor. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. Avoid release to the environment.

Response	If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention. 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)	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

11.8% of the mixture consists of component(s) of unknown acute hazards to the aquatic environment.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Acetone		67-64-1	80 - 90
Carbon dioxide		124-38-9	10 - 20
Toluene		108-88-3	1 - 3

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	Rinse skin with water/shower. 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. Get medical attention if irritation develops and persists.
Ingestion	In the unlikely event of swallowing contact a physician or poison control center. Rinse mouth.
Most important symptoms/effects, acute and delayed	May cause drowsiness and dizziness. Headache. Nausea, vomiting. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Prolonged exposure may cause chronic effects.
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. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media	Alcohol resistant foam. Water fog. Carbon dioxide (CO2). Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
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. 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. 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. 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. Avoid contact with eyes. Avoid prolonged exposure. 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. 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

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
Acetone (CAS 67-64-1)	STEL	750 ppm
	TWA	500 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value
Carbon dioxide (CAS 124-38-9)	STEL	30000 ppm
	TWA	5000 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
Carbon dioxide (CAS 124-38-9)	STEL	54000 mg/m3 30000 ppm
	TWA	9000 mg/m3 5000 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)	50 mg/l	Acetone	Urine	*
Toluene (CAS 108-88-3)	0.3 mg/g	o-Cresol, with hydrolysis	Creatinine in urine	*
	0.03 mg/l	Toluene	Urine	*
	0.02 mg/l	Toluene	Blood	*

* - For sampling details, please see the source document.

Exposure guidelines

US - California OELs: Skin designation

Toluene (CAS 108-88-3) Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies

Toluene (CAS 108-88-3) Skin designation applies.

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. Provide eyewash station.

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 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 Clear. Colorless.

Odor	Sweet.
Odor threshold	Not available.
pH	Not available.
Melting point/freezing point	-138.8 °F (-94.9 °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 (%)	1.2 % estimated
Flammability limit - upper (%)	12.8 % estimated
Vapor pressure	6962 hPa estimated
Vapor density	2 (air = 1)
Relative density	0.88 estimated
Solubility (water)	Slightly soluble.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	869 °F (465 °C) estimated
Decomposition temperature	Not available.
Viscosity (kinematic)	Not available.
Percent volatile	88.2 % 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	Acids. Aluminum.
Hazardous decomposition products	Carbon oxides.

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	Prolonged skin contact may cause temporary irritation.
Eye contact	Causes serious eye irritation.
Ingestion	Acetone poisoning may result in liver and kidney damage.
Symptoms related to the physical, chemical and toxicological characteristics	Headache. May cause drowsiness and dizziness. Nausea, vomiting. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.

Information on toxicological effects

Acute toxicity Narcotic effects.

Product	Species	Test Results
Brakleen® Brake Parts Cleaner		
Acute		
Dermal		
LD50	Rabbit	22231 mg/kg estimated

Product	Species	Test Results
Inhalation		
LC50	Rat	33087 ppm, 4 hours estimated
		82 mg/l, 4 Hours estimated
Oral		
LD50	Rat	6560 mg/kg estimated

* 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 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 This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

IARC Monographs. Overall Evaluation of Carcinogenicity

Toluene (CAS 108-88-3) 3 Not classifiable as to carcinogenicity to humans.

Reproductive toxicity Suspected of damaging the unborn child.

Specific target organ toxicity - single exposure May cause drowsiness and dizziness.

Specific target organ toxicity - repeated exposure May cause damage to organs through prolonged or repeated exposure: Liver. Kidneys. Brain. Lungs.

Aspiration hazard Based on available data, the classification criteria are not met.

Chronic effects May cause damage to organs through prolonged or repeated exposure. Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity Harmful to aquatic life.

Product		Species	Test Results
Brakleen® Brake Parts Cleaner			
Aquatic			
Acute			
Fish	LC50	Fish	7948.4028 mg/l, 96 hours estimated

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
Toluene (CAS 108-88-3)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	5.46 - 9.83 mg/l, 48 hours
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
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	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, 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.
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	Allowed.
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

Toluene (CAS 108-88-3)

CERCLA Hazardous Substance List (40 CFR 302.4)

Acetone (CAS 67-64-1)	Listed.
Toluene (CAS 108-88-3)	Listed.

CERCLA Hazardous Substances: Reportable quantity

Acetone (CAS 67-64-1)	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

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

Food and Drug Administration (FDA) Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Section 311/312 Hazard categories Immediate Hazard - Yes
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)
Toluene (CAS 108-88-3)

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

Acetone (CAS 67-64-1)
Carbon dioxide (CAS 124-38-9)
Toluene (CAS 108-88-3)

US. Massachusetts RTK - Substance List

Acetone (CAS 67-64-1)
Carbon dioxide (CAS 124-38-9)
Toluene (CAS 108-88-3)

US. Pennsylvania Worker and Community Right-to-Know Law

Acetone (CAS 67-64-1)
Toluene (CAS 108-88-3)
Carbon dioxide (CAS 124-38-9)

US. Rhode Island RTK

Acetone (CAS 67-64-1)

Toluene (CAS 108-88-3)

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

US - California Proposition 65 - CRT: Listed date/Developmental toxin

Benzene (CAS 71-43-2)	Listed: December 26, 1997
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

US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

Benzene (CAS 71-43-2)	Listed: December 26, 1997

Volatile organic compounds (VOC) regulations

EPA

VOC content (40 CFR 51.100(s))	2.7 %
Consumer products (40 CFR 59, Subpt. C)	Not regulated

State

Consumer products	This product is regulated as a Brake Cleaner. This product is compliant for use in all 50 states. This product also complies with South Coast Air Quality Management District Rule 1171.
VOC content (CA)	2.7 %
VOC content (OTC)	2.7 %

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
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	05-26-2015
Prepared by	Allison Cho
Version #	01
Further information	CRC # 668A
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

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**
22777 Springwoods Village Parkway
Spring, TX. 77389 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 1910.1200.

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

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

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.

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

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]

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

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.

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	3 = IARC 1	5 = IARC 2B
2 = NTP SUS	4 = IARC 2A	6 = OSHA CARC

SECTION 12 ECOLOGICAL INFORMATION

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

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

AIR (IATA): Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

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

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

THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:
Updates made in accordance with implementation of GHS requirements.

The information and recommendations contained herein are, to the best of ExxonMobil's knowledge and belief, accurate and reliable as of the date issued. You can contact ExxonMobil to insure that this document is the most current available from ExxonMobil. The information and recommendations are offered for the user's consideration and examination. It is the user's responsibility to satisfy itself that the product is suitable for the intended use. If buyer repackages this product, it is the user's responsibility to insure proper health, safety and other necessary information is included with and/or on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, re-publication or retransmission of this document, in whole or in part, is not permitted. The term, "ExxonMobil" is used for convenience, and may include any one or more of ExxonMobil Chemical Company, Exxon Mobil Corporation, or any affiliates in which they directly or indirectly hold any interest.

Internal Use Only
MHC: 0B, 0B, 0, 0, 0, 0 PPEC: A

DGN: 2004671XUS (546411)

Safety Data Sheet

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Chevron Supreme Motor Oil SAE 10W-40

Product Use: Passenger Car Motor Oil
Product Number(s): 224119
Company Identification
Chevron Products Company
a division of Chevron U.S.A. Inc.
6001 Bollinger Canyon Rd.
San Ramon, CA 94583
United States of America
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: 1 (800) 582-3835, LUBETEK@chevron.com

SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION: Not classified as hazardous according to the Taiwan CNS Standard.

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

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

SECTION 4 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.

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. Combustion may form oxides of: Nitrogen.

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	Form	TWA	STEL	Ceiling	Notation
Highly refined mineral oil (C15 - C50)	Taiwan	--	5 mg/m3	--	--	--

Consult local authorities for appropriate values.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

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

Color: Brown to yellow
Physical State: Liquid
Odor: Petroleum odor
Odor Threshold: No data available
pH: Not Applicable
Vapor Pressure: No data available
Vapor Density (Air = 1): No data available
Boiling Point: No data available
Solubility: Soluble in hydrocarbons; insoluble in water
Freezing Point: No data available
Melting Point: No data available
Density: 0.8712 kg/l - 0.8799 kg/l @ 15°C (59°F) (Typical)
Viscosity: 13.20 mm2/s - 19.60 mm2/s @ 100°C (212°F)
Coefficient of Therm. Expansion / °F: No data available
Evaporation Rate: No data available
Octanol/Water Partition Coefficient: No data available

FLAMMABLE PROPERTIES:
Flashpoint: (Cleveland Open Cup) 205 °C (401 °F) (Minimum)
Autoignition: No data available
Flammability (Explosive) Limits (% by volume in air): Lower: No data available Upper: No data available

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.

SECTION 11 TOXICOLOGICAL INFORMATION

IMMEDIATE HEALTH EFFECTS
Eye: Not expected to cause prolonged or significant eye irritation.
Eye Irritation: The eye irritation hazard is based on evaluation of data for similar materials or product components.

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.
Acute Dermal Toxicity: The acute dermal toxicity hazard is based on evaluation of data for similar materials or product components.
Skin Irritation: The skin irritation hazard is based on evaluation of data for similar materials or product components.
Skin Sensitization: The skin sensitization hazard is based on evaluation of data for similar materials or product components.

Ingestion: Not expected to be harmful if swallowed.
Acute Oral Toxicity: The acute oral toxicity hazard is based on evaluation of data for similar materials or product components.

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

Acute Toxicity Estimate: Not Determined

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.

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.

UN Shipping Description: NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER THE UNITED NATIONS MODEL REGULATIONS/RECOMMENDATIONS

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

SECTION 15 REGULATORY INFORMATION

REGULATORY LISTS SEARCHED:
01-1=IARC Group 1
01-2A=IARC Group 2A
01-2B=IARC Group 2B
02=Taiwan, Dangerous Materials
03=Taiwan, Toxic Materials

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

CHEMICAL INVENTORIES:
All components comply with the following chemical inventory requirements: DSL (Canada), ENCS (Japan), KECI (Korea), NZIoC (New Zealand), TSCA (United States).

One or more components does not comply with the following chemical inventory requirements: AIIC (Australia), EINECS (European Union), IECSC (China), PICCS (Philippines), TCSI (Taiwan).

SECTION 16 OTHER INFORMATION

REVISION STATEMENT: SECTION 09 - Physical/Chemical Properties information was modified. SECTION 15 - Chemical Inventories information was modified.

Revision Date: September 10, 2021

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
	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Governmental Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	MSDS - Material Safety Data Sheet
CVX - Chevron	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

Prepared according to the Taiwan Standard CNS 15030 by Chevron Energy Technology Company, 6001 Bollinger Canyon Road, San Ramon, CA 94583.

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

Cetus PAO 32, 46, 68, 100, 150

Product Use: Compressor Oil
Product Number(s): 219402, 219403, 293024, 293025, 293026, 293027, 293028, 293137, 293138, 293139, 293140, 293141
Synonyms: Cetus PAO 100 ISOCLEAN Certified; Cetus PAO 150 ISOCLEAN Certified; Cetus PAO 32 ISOCLEAN Certified; Cetus PAO 46 ISOCLEAN Certified; Cetus PAO 68 ISOCLEAN Certified
Company Identification
Chevron Products Company
a division of Chevron U.S.A. Inc.
6001 Bollinger Canyon Rd.
San Ramon, CA 94583
United States of America
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: 1 (800) 582-3835, LUBETEK@chevron.com

SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION:

- Reproductive toxicant (fertility): Category 2.

Signal Word: Warning
Health Hazards:
- Suspected of damaging fertility.

PRECAUTIONARY STATEMENTS:
Prevention:
- Obtain special instructions before use.

- Do not handle until all safety precautions have been read and understood.
- Use personal protective equipment as required.

Response:
- IF exposed or concerned: Get medical advice/attention.

Storage:
- Store locked up.

Disposal:
- Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

HAZARDS NOT OTHERWISE CLASSIFIED: Not Applicable

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
N-Phenylbenzenamine, reaction products with 2,4,4-trimethylpentene	68411-46-1	1 - < 3 %weight

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: High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.

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 synthetic hydrocarbon 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.

DELAYED OR OTHER HEALTH EFFECTS:

Reproduction and Birth Defects: Swallowing this material may cause adverse reproductive effects based on animal data. See Section 11 for additional information. Risk depends on duration and level of exposure.

Indication of any immediate medical attention and special treatment needed

Note to Physicians: In an accident involving high-pressure equipment, this product may be injected under the skin. Such an accident may result in a small, sometimes bloodless, puncture wound. However, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.
Unusual Fire Hazards: Leaks/ruptures in high pressure system using materials of this type can create a fire hazard when in the vicinity of ignition sources (eg. open flame, pilot lights, sparks, or electric arcs).

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. Combustion may form oxides of: Nitrogen.

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 and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 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: DO NOT USE IN HIGH PRESSURE SYSTEMS in the vicinity of flames, sparks and hot surfaces. Use only in well ventilated areas. Keep container closed. Do not get in eyes, on skin, or on clothing. Do not taste or swallow. Wash thoroughly after handling.
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 workplace when designing engineering controls and selecting personal protective equipment (PPE). If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, refer to PPE information below.

Factors that affect PPE include, but are not limited to: properties of the chemical, other chemicals which may contact the same PPE, physical requirements (fit & sizing, cut/puncture protection, dexterity, thermal protection, etc.), and potential allergic reactions to the PPE material. It is the responsibility of the user to read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances. Refer to appropriate CEN standards.
Special note: Do not use in breathing air apparatus or medical equipment.

ENGINEERING CONTROLS:
Use general ventilation, local exhaust ventilation, or a combination of both.

PERSONAL PROTECTIVE EQUIPMENT
Eye/Face Protection: Wear protective equipment to prevent eye contact. Selection of protective equipment may include safety glasses, chemical goggles, face shields, or a combination depending on the work operations conducted.
Skin Protection: Wear chemical personal protective equipment (PPE) to prevent skin contact. Selection of chemical protective clothing should be performed by an Occupational Hygienist or Safety Professional and be based upon applicable standards (ASTM F739 or EN 374). Using chemical PPE depends upon operations conducted and may include chemical gloves, boots, chemical apron, chemical suit, and complete facial protection. Refer to PPE manufacturers to obtain breakthrough time information to determine how long PPE can be used before it needs to be replaced. Unless specific glove manufacturer data indicates otherwise, the below table is based upon available industry data to assist in the glove selection process and is intended to be used as reference only.

Chemical Glove Material	Thickness (mm)	Typical Breakthrough Time (minutes)
Butyl	0.7	120
Neoprene	0.61	120
Nitrile	0.8	120
Polyvinyl Chloride (PVC)	1.1	120
Viton Butyl	0.3	120

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: No applicable occupational exposure limits exist for this material or its components. Consult local authorities for appropriate values.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

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

Color: Colorless to yellow
Physical State: Liquid
Odor: Faint or Mild
Odor Threshold: No data available
pH: Not Applicable
Vapor Pressure: No data available
Vapor Density (Air = 1): No data available
Initial Boiling Point: No data available
Solubility: Soluble in hydrocarbons; insoluble in water
Freezing Point: No data available
Melting Point: No data available
Density: 0.8375 kg/l - 0.8528 kg/l @ 15°C (59°F) (Typical)
Viscosity: 32 mm2/s - 150 mm2/s @ 40°C (104°F)
Evaporation Rate: No data available
Decomposition temperature: No data available
Octanol/Water Partition Coefficient: No data available

FLAMMABLE PROPERTIES:
Flammability (solid, gas): Not Applicable

Flashpoint: (Cleveland Open Cup) 220 °C (428 °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.

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects
Serious Eye Damage/Irritation: The material is not considered an eye irritant. The product has not been tested. The statement is based on evaluation of data for product components.

Skin Corrosion/Irritation: The material is not considered a skin irritant. The product has not been tested. The statement is based on evaluation of data for product components.

Skin Sensitization: The material is not considered a skin sensitizer. The product has not been tested. The statement is based on evaluation of data for product components.

Acute Dermal Toxicity: The material is not considered a dermal toxicant. The product has not been tested. The statement is based on evaluation of data for product components.

Acute Oral Toxicity: The material is not considered an oral toxicant. The product has not been tested. The statement is based on evaluation of data for product components.

Acute Inhalation Toxicity: The material is not considered an inhalation toxicant. The product has not been tested. The statement is based on evaluation of data for product components.
Acute Toxicity Estimate: Not Determined

Germ Cell Mutagenicity: The material is not considered a mutagen. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Carcinogenicity: The material is not considered a carcinogen. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Reproductive Toxicity: This material is suspected of damaging fertility. The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Specific Target Organ Toxicity - Single Exposure: The material is not considered a target organ toxicant (single exposure). The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Specific Target Organ Toxicity - Repeated Exposure: The material is not considered a target organ toxicant (repeated exposure). The product has not been tested. The statement is based on evaluation of data for similar materials or product components.

Aspiration Hazard: The material is not considered an aspiration hazard.

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 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.

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.

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

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

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code:
Not applicable

SECTION 15 REGULATORY INFORMATION

EPCRA 311/312 CATEGORIES:
Reproductive toxicity

REGULATORY LISTS SEARCHED:

01-1=IARC Group 1	05=MA RTK
01-2A=IARC Group 2A	06=NJ RTK
01-2B=IARC Group 2B	07=PA RTK
02=NTP Carcinogen	08-1=TSCA 5(e)
03=EPCRA 313	08-2=TSCA 12(b)
04=CA Proposition 65	

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

CHEMICAL INVENTORIES:
All components comply with the following chemical inventory requirements: AIIC (Australia), DSL (Canada), EINECS (European Union), ENCS (Japan), IECSC (China), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (United States).

NEW JERSEY RTK CLASSIFICATION:
Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows: PETROLEUM OIL (Lubricating oil)

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 0 Flammability: 1 Reactivity: 0

HMIS RATINGS: Health: 0 Flammability: 1 Reactivity: 0
(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT: SECTION 02 - Hazard Statements information was added.
SECTION 02 - Health Classification information was added.
SECTION 02 - Pictogram information was added.
SECTION 02 - Precautionary Statements information was added.
SECTION 02 - Signal Word information was added.
SECTION 03 - Composition information was added.
SECTION 04 - Delayed Health Effects - Reproductive Toxicity information was modified.
SECTION 07 - Precautionary Measures information was modified.
SECTION 08 - Engineering Control Measures information was modified.
SECTION 08 - Eye/Face Protection information was modified.
SECTION 08 - General Considerations information was modified.

SECTION 08 - Personal Protective Equipment List information was deleted.
SECTION 08 - Personal Protective Equipment information was added.
SECTION 08 - Skin Protection information was modified.
SECTION 11 - Carcinogenicity information was added.
SECTION 11 - Germ Cell Mutagenicity information was added.
SECTION 11 - Reproductive Toxicity information was added.
SECTION 11 - Specific Target Organ Toxicity - Repeated Exposure information was added.
SECTION 11 - Specific Target Organ Toxicity - Single Exposure information was added.
SECTION 11 - Toxicological Information information was added.
SECTION 11 - Toxicological Information information was modified.
SECTION 15 - SARA 311 EPCRA Score information was added.
SECTION 15 - SARA 311 EPCRA Score information was deleted.

Revision Date: September 01, 2022

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	

Prepared according to the 29 CFR 1910.1200 (2012) by Chevron Technical Center, 6001 Bollinger Canyon Road, San Ramon, CA 94583.

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

Revision Date 15-Jan-2021 **Version** 9

1. IDENTIFICATION

Product identifier
Product Name COPPER ANTI-SEIZE LUBRICANT 8OZ

Other means of identification
Product Code 09128

Recommended use of the chemical and restrictions on use
Recommended Use Lubricant
Uses advised against No information available

Details of the supplier of the safety data sheet
Manufacturer Address
ITW Permatex
6875 Parkland Blvd.
Solon, Ohio 44139 USA
Telephone: 1-87-Permatex
(866) 732-9502

May Also Be Distributed by:
ITW Permatex Canada
101-2360 Bristol Circle
Oakville, ON Canada L6H 6M5
Telephone: (800) 924-6994

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)

Carcinogenicity	Category 1B

Label elements

Emergency Overview

Signal word
Danger

May cause cancer

Appearance Copper	**Physical state** Paste Liquid	**Odor** Petroleum

Precautionary Statements - Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required

Precautionary Statements - Response
IF exposed or concerned: 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 ON SKIN: Gently wash with plenty of soap and water
If skin irritation occurs: Get medical advice/attention

Precautionary Statements - Storage
Store in a well-ventilated place. Keep container tightly closed
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)
Not applicable

Other Information
Very toxic to aquatic life with long lasting effects.

Unknown acute toxicity 27.25 % of the mixture consists of ingredient(s) of unknown toxicity

3. COMPOSITION/INFORMATION ON INGREDIENTS

The product contains no substances which at their given concentration, are considered to be hazardous to health.

Chemical Name	CAS No	Weight-%
DISTILLATES (PETROLEUM), HYDROTREATED HEAVY PARAFFINIC	64742-54-7	30 - 60
MAGNESIUM SILICATE	14807-96-6	10 - 30
LIMESTONE	1317-65-3	10 - 30
COPPER	7440-50-8	3 - 7
GRAPHITE	7782-42-5	1 - 5
AMORPHOUS SILICA	7631-86-9	1 - 5

4. FIRST AID MEASURES

Description of first aid measures

General advice Call 911 or emergency medical service. Remove and isolate contaminated clothing and shoes.

Eye contact In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

Skin contact IF ON SKIN:. Wash with soap and water.

Inhalation Move victim to fresh air. If breathing is irregular or stopped, administer artificial respiration.

Administer oxygen if breathing is difficult.

Ingestion IF SWALLOWED:. Do NOT induce vomiting.

Self-protection of the first aider Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

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
Dry chemical, CO2, water spray or regular foam, Water spray, fog or regular foam, Move containers from fire area if you can do it without risk, Dike fire-control water for later disposal

Unsuitable extinguishing media
Do not scatter spilled material with high pressure water streams

Specific hazards arising from the chemical
Some may burn but none ignite readily. Those substances designated with a "P" may polymerize explosively when heated or involved in a fire. Some may be transported hot.

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 Do not touch or walk through spilled material. Stop leak if you can do it without risk.

Environmental precautions

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

Methods and material for containment and cleaning up

Methods for containment Prevent dust cloud.

Methods for cleaning up Cover liquid spill with sand, earth or other non-combustible absorbent material. With clean shovel place material into clean, dry container and cover loosely; move containers from spill area. Take up with sand or other non-combustible absorbent material and place into containers for later disposal. Cover powder spill with plastic sheet or tarp to minimize spreading.

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 Avoid contact with skin and eyes.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep in a dry, cool and well-ventilated place.

Incompatible materials Strong oxidizing agents, Acids, Alkalis

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines .

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
MAGNESIUM SILICATE 14807-96-6	TWA: 2 mg/m³ particulate matter containing no asbestos and <1% crystalline silica, respirable particulate matter	(vacated) TWA: 2 mg/m³ respirable dust <1% Crystalline silica, containing no Asbestos TWA: 20 mppcf if 1% Quartz or more;use Quartz limit	IDLH: 1000 mg/m³ TWA: 2 mg/m³ containing no Asbestos and <1% Quartz respirable dust
LIMESTONE 1317-65-3	-	TWA: 15 mg/m³ total dust TWA: 5 mg/m³ respirable fraction (vacated) TWA: 15 mg/m³ total dust (vacated) TWA: 5 mg/m³ respirable fraction	TWA: 10 mg/m³ total dust TWA: 5 mg/m³ respirable dust
COPPER 7440-50-8	TWA: 0.2 mg/m³ fume	TWA: 0.1 mg/m³ fume TWA: 1 mg/m³ dust and mist (vacated) TWA: 0.1 mg/m³ Cu dust, fume, mist	IDLH: 100 mg/m³ dust, fume and mist TWA: 1 mg/m³ dust and mist TWA: 0.1 mg/m³ fume
GRAPHITE 7782-42-5	TWA: 2 mg/m³ respirable particulate matter all forms except graphite fibers	TWA: 15 mg/m³ total dust synthetic TWA: 5 mg/m³ respirable fraction synthetic (vacated) TWA: 2.5 mg/m³ respirable dust natural (vacated) TWA: 10 mg/m³ total dust synthetic (vacated) TWA: 5 mg/m³ respirable fraction synthetic TWA: 15 mppcf natural	IDLH: 1250 mg/m³ TWA: 2.5 mg/m³ natural respirable dust
AMORPHOUS SILICA 7631-86-9	-	TWA: 50 µg/m³ excludes construction work, agricultural operations, and exposures that result from the processing of sorptive clays (vacated) TWA: 6 mg/m³ <1% Crystalline silica TWA: 20 mppcf : (80)/(% SiO2) mg/m ³ TWA	IDLH: 3000 mg/m³ TWA: 6 mg/m³

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 Showers
Eyewash stations
Ventilation systems

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 natural rubber, nitrile rubber, Neoprene™ or PVC gloves.

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

9.1. Information on basic physical and chemical properties

Physical state	Paste Liquid
Appearance	Copper
Odor	Petroleum
Odor threshold	No information available

Property	**Values**	**Remarks • Method**
pH	No information available	
Melting point / freezing point	No information available	
Boiling point / boiling range	No information available	
Flash point	216 °C / 421 °F	
Evaporation rate	No information available	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	No information available	
Vapor density	No information available	Air = 1
Relative density	1.21	
Water solubility	Insoluble in water	
Solubility(ies)	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%
Density	No information available
Bulk density	No information available
SADT (self-accelerating decomposition temperature)	No information available

10. STABILITY AND REACTIVITY

Reactivity
No information available

Chemical stability
Stable under normal conditions

Possibility of Hazardous Reactions
None under normal processing.

Conditions to avoid
Excessive heat.

Incompatible materials
Strong oxidizing agents, Acids, Alkalis

Hazardous Decomposition Products
Carbon oxides
Metal oxides
Halogenated compounds

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
DISTILLATES (PETROLEUM), HYDROTREATED HEAVY PARAFFINIC 64742-54-7	> 15 g/kg (Rat)	> 5000 mg/kg (Rabbit)	-
GRAPHITE 7782-42-5	-	-	> 2000 mg/m³ (Rat) 4 h
AMORPHOUS SILICA 7631-86-9	= 7900 mg/kg (Rat)	> 5000 mg/kg (Rabbit)	> 2.2 mg/L (Rat) 1 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 The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
DISTILLATES (PETROLEUM), HYDROTREATED HEAVY PARAFFINIC 64742-54-7	A2	Group 1	Known	X
MAGNESIUM SILICATE 14807-96-6	-	Group 3	-	X
AMORPHOUS SILICA 7631-86-9	-	Group 3	-	-

ACGIH (American Conference of Governmental Industrial Hygienists)
A2 - Suspected Human Carcinogen
IARC (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Not classifiable as a human carcinogen
NTP (National Toxicology Program)
Known - Known Carcinogen
OSHA (Occupational Safety and Health Administration of the US Department of Labor)
X - Present

Chronic toxicity May cause adverse liver effects.
Target Organ Effects Central Vascular System (CVS), Eyes, kidney, Liver, Respiratory system, Skin.

The following values are calculated based on chapter 3.1 of the GHS document .
ATEmix (oral) 18281 mg/kg
ATEmix (dermal) 6332 mg/kg

12. ECOLOGICAL INFORMATION

This product contains a chemical which is listed as a severe marine pollutant according to DOT.

Ecotoxicity

0 % of the mixture consists of component(s) of unknown hazards to the aquatic environment

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

This product contains one or more substances that are listed with the State of California as a hazardous waste.

14. TRANSPORT INFORMATION

DOT

Proper shipping name	Not regulated
Marine pollutant	This product contains a chemical which is listed as a severe marine pollutant according to DOT.

IATA

Proper shipping name	Not regulated

IMDG

Proper shipping name	Not regulated

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	Does not comply
IECSC	Complies
KECL	Complies
PICCS	Complies

AICS Complies

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 contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	SARA 313 - Threshold Values %
COPPER - 7440-50-8	1.0

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)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
COPPER 7440-50-8	-	X	X	-

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)

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
COPPER 7440-50-8	5000 lb	-	RQ 5000 lb final RQ RQ 2270 kg final RQ

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals

Chemical Name	California Proposition 65
AMORPHOUS SILICA 7631-86-9	*Carcinogen

• *The asterisked chemical(s) listed are not subject to Proposition 65 because they are not airborne in the finished product

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
MAGNESIUM SILICATE 14807-96-6	X	X	X
LIMESTONE 1317-65-3	X	X	X
COPPER 7440-50-8	X	X	X
AMORPHOUS SILICA 7631-86-9	-	X	X
GRAPHITE 7782-42-5	X	X	X

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

WHMIS Hazard Class
D2A - Very toxic materials

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION

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 15-Jan-2021

Disclaimer
Illinois Tool Works Inc. believes the information contained in this data sheet is accurate as of the date compiled. However, Illinois Tool Works Inc. makes no warranty, express or implied, as to the accuracy, reliability or completeness of the information. User is responsible for evaluating whether such information or this product is fit for a particular purpose and suitable for a particular use or application. The information in this data sheet may not be valid if this product is used in combination with other products or in processes for which it was not designed. Illinois Tool Works Inc. disclaims any liability for consequential or incidental damages of any kind, including lost profits, arising from the sale or use of this product. Ensure you have the most current version of this data sheet by contacting us or reviewing our web site.

End of Safety Data Sheet

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 Products Company
a division of Chevron U.S.A. Inc.
6001 Bollinger Canyon Rd.
San Ramon, CA 94583
United States of America
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: 1 (800) 582-3835, LUBETEK@chevron.com

SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION: Not classified as hazardous according to 29 CFR 1910.1200 (2012).

HAZARDS NOT OTHERWISE CLASSIFIED: Not Applicable

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

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

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.

DELAYED OR OTHER HEALTH EFFECTS: Not classified

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 and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 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, Viton, Silver Shield.
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	Agency	TWA	STEL	Ceiling	Notation
Highly refined mineral oil (C15 - C50)	OSHA Z-1	5 mg/m3	--	--	--
Highly refined mineral oil (C15 - C50)	ACGIH	5 mg/m3	10 mg/m3	--	--
Zinc dialkyldithiophosphate	Not Applicable	--	--	--	--
Phenol, dodecyl-, branched	Not Applicable	--	--	--	--

Consult local authorities for appropriate values.

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.

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.

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.

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

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

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code:
Not applicable

SECTION 15 REGULATORY INFORMATION

EPCRA 311/312 CATEGORIES:

1.	Immediate (Acute) Health Effects:	NO
2.	Delayed (Chronic) Health Effects:	NO
3.	Fire Hazard:	NO
4.	Sudden Release of Pressure Hazard:	NO
5.	Reactivity Hazard:	NO

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

The following components of this material are found on the regulatory lists indicated.
Zinc dialkyldithiophosphate 03, 06

CHEMICAL INVENTORIES:
All components comply with the following chemical inventory requirements: AICS (Australia), DSL (Canada), KECI (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).

NEW JERSEY RTK CLASSIFICATION:
Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows: PETROLEUM OIL (Motor oil)

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 0 Flammability: 1 Reactivity: 0

HMIS RATINGS: Health: 0 Flammability: 1 Reactivity: 0
(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT: This revision updates the following sections of this Safety Data Sheet: 3,9,15,16
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	

Prepared according to the 29 CFR 1910.1200 (2012) by Chevron Energy Technology Company, 6001 Bollinger Canyon Road San Ramon, CA 94583.

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.

Tech Data

PETRO-CANADA LUBRICANTS

DEXRON® Gear Oil 75W-90 & DEXRON® LS Gear Oil 75W-90

Introduction

Petro-Canada's DEXRON® gear oils are synthetic extreme pressure (EP) automotive axle lubricants formulated to provide excellent long-lasting wear protection to extend equipment life and reduce downtime and maintenance costs. These API GL-5 quality products are offered in the SAE 75W-90 viscosity grade and provide excellent year-round performance. DEXRON® Gear Oil 75W-90 is particularly suited for applications requiring a synthetic gear lubricant that meets General Motors 9986285 (or GMW16433). DEXRON® LS Gear Oil 75W-90, with added friction modifiers to perform in limited-slip differentials†, is designed for applications requiring a product that meets General Motors 9986290 (or GMW 16445).

DEXRON® hypoid gear oils start with the HT purity process to produce a 99.9% pure, crystal clear base oil. By removing the impurities that can hinder the performance of competitive conventional oils, and blending in specialty additives, DEXRON® gear oils deliver maximum performance.

Features and Benefits

Overall Excellent Durability and Wear Protection

- **As a result of its anti-wear EP additives, DEXRON® gear oils provide excellent protection as proven by their performance in the stressed L-37 and L-42 durability tests. They can protect equipment being driven longer, harder and faster in tougher conditions for extended equipment life and reduced maintenance costs.**

The L-37 (ASTM D6121) durability test is an axle dynamometer test that assesses fluid performance under low speed and high torque conditions. The stressed or high temperature L-37 is run at 163°C/325°F for 16 hours where parts are rated at the end of test for wear, ridging, rippling, pitting/spalling and scoring.

- **DEXRON® gear oils provide superior protection as proven by meeting or exceeding the specification requirements for all five parameters of the stressed L-37 test.**

What is the HT difference?

Petro-Canada Lubricants starts with the HT purity process to produce water-white, 99.9% pure base oils. The result is a range of lubricants, specialty fluids and greases that deliver maximum performance for our customers.

MAXIMUM PERFORMANCE • PERFORMANCE MAXIMALE • HT TM/MC

L-37 Test (GMW 16445 & GMW 16433 Requirements)					
		DEXRON® GEAR OIL 75W-90		DEXRON® LS GEAR OIL 75W-90	
Parameter	Requirement	Ring Gear	Pinion Gear	Ring Gear	Pinion Gear
Wear	≥ 5	7.0	7.0	7.0	8.0
Rippling	≥ 8	9.0	9.0	9.0	9.0
Ridging	≥ 8	10.0	9.0	10.0	8.0
Pitting/Spalling	≥ 9.3	9.9	9.9	9.9	9.8
Scoring	≥ 9	10.0	10.0	10.0	10.0

DEXRON® is a registered trademark of General Motors LLC.
†DEXRON® Limited Slip (LS) Gear Oil is primarily for use in axles in cars and trucks with plate type GM LS differentials.

The L-42 (ASTM D7452) durability test is an axle dynamometer test that operates under high speed and shock load conditions evaluating the ability to prevent seizure. Parts are rated based on the area of scoring on the gear teeth.

- **DEXRON® gear oils protect equipment to ensure extended life as proven by the L-42 test results.**

L-42 Test*				
	DEXRON® GEAR OIL 75W-90		DEXRON® LS GEAR OIL 75W-90	
	Ring Gear, Coast Side	Pinion Gear, Coast Side	Ring Gear, Coast Side	Pinion Gear, Coast Side
% Scoring	8	14	9	19
% Scoring (reference oil avg.)	20	25	20	25

*GMW 16445 & GMW 16433 requirements are that the result must be better (lower) than the reference oil result.

Typical Performance Data

PROPERTY	ASTM TEST METHOD	DEXRON® GEAR OIL 75W-90	DEXRON® LS GEAR OIL 75W-90
Density, kg/L, 15°C (60°F)	ASTM D4052	0.8567	0.8601
Flash Point, COC, °C (°F)	ASTM D92	187 (369)	183 (361)
Kinematic Viscosity, cSt @ 40°C (SUS @ 100°F) cSt @ 100°C (SUS @ 210°F)	ASTM D445	 88.5 (448.8) 15.2 (80.2)	 83.75 (424.8) 14.4 (76.9)
Brookfield Viscosity, cP @ -40°C (-40°F)	ASTM D2983	41,391	38,142
Viscosity Index	ASTM D2270	182	179
Pour Point, °C (°F)	ASTM D5950	< -57 (-71)	< -57 (-71)
Foaming Resistance, Sequence 1 Sequence 2 Sequence 3	ASTM D892	0/0 25/0 0/0	0/0 20/0 0/0

The values quoted above are typical of normal production. They do not constitute a specification.

To order product or to learn more about how Petro-Canada Lubricants can help your business visit: **lubricants.petro-canada.com** or contact us at: **lubecsr@petrocanadalsp.com**

CERTIFIED
ISO 9001
ISO 14001
ISO/TS 16949

IM-8079E (2016.11)

Beyond today's standards.™

PETRO-CANADA™ LUBRICANTS

PETRO-CANADA

Material Safety Data Sheet

WHMIS (Pictograms)	WHMIS (Classification)	Protective Clothing	TDG (pictograms)
	B-3, D-2B		

Section 1. Chemical Product and Company Identification

Product Name	**DIESEL FUEL**	**Code**	W104 SAP: 120, 121, 122, 287
Synonym	Diesel 50, Diesel 50 LS, #1 Diesel , #1 Diesel LS, Diesel LC, Seasonal Diesel, Seasonal Diesel LS, Diesel AA, Domestic Marine Diesel, International marine Diesel, Seasonal Diesel Locomotive, Domestic Marine diesel LS, diesel -20°C (LS), LSD, Low Sulphur Diesel, dyed diesel, marked diesel, coloured diesel, Naval Distillate.	**Validated on**	**3/2/2001.**
Manufacturer	PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3	**In case of Emergency**	Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).
Material Uses	Diesel fuels are distillate fuels suitable for use in high and medium speed internal combustion engines of the compression ignition type.		

Section 2. Composition and Information on Ingredients

			Exposure Limits (ACGIH)		
Name	**CAS #**	**% (V/V)**	**TLV-TWA(8 h)**	**STEL**	**CEILING**
1) Diesel oil. 2) Proprietary additives. 3) Aromatic content is 50% maximum (benzene: nil). 4) * Notice of Intended Change (2000): 100 mg/m³, skin, A3.	68334-30-5 Not available	>99.9 <0.1	Not established* Not established	Not established Not established	Not established Not established

Manufacturer Recommendation	Not applicable
Other Exposure Limits	Consult local, state, provincial or territory authorities for acceptable exposure limits.

Section 3. Hazards Identification.

Potential Health Effects	Eye contact may cause mild eye irritation. Skin contact can cause moderate to severe irritation and produce drying, cracking, or defatting dermatitis. Inhalation of vapours can cause CNS depression with symptoms of nausea, headaches, vomiting, dizziness, fatigue, light-headedness, reduced coordination, unconciousness and possibly death. Inhalation can also cause irritation of nose and throat. Aspiration of liquid drops into the lungs may produce potentially fatal chemical pneumonitis (fluid in the lungs), severe lung damage, or respiratory failure. For more information, refer to Section 11.

Section 4. First Aid Measures

Eye Contact	IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek medical attention.
Skin Contact	Remove contaminated clothing - launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Seek medical attention.
Inhalation	Evacuate the victim to a safe area as soon as possible. If the victim is not breathing, perform artificial respiration. Allow the victim to rest in a well ventilated area. Seek medical attention.
Ingestion	DO NOT induce vomiting because of danger of aspirating liquid into lungs. Seek medical attention.
Note to Physician	Not available

Section 5. Fire-fighting Measures

Flammability	Class II - combustible liquid (NFPA).	**Flammable Limits**	LOWER: 0.7%, UPPER: 6%
Flash Points	Diesel Fuel: Closed Cup: >40ºC (>104ºF) Marine Diesel Fuel: Closed Cup: >60ºC (>140ºF)	**Auto-Ignition Temperature**	225ºC (437ºF)
Fire Hazards in Presence of Various Substances	Flammable in presence of open flames, sparks, or heat. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back. This product can accumulate static charge and ignite. May accumulate in confined spaces.	**Explosion Hazards in Presence of Various Substances**	Containers may explode in heat of fire. Do not cut, weld, heat, drill or pressurize empty container. Vapour explosion hazard indoors, outdoors or in sewers. Runoff to sewer may create fire or explosion hazard.
Products of Combustion	Carbon oxides (CO, CO2), nitrogen oxides (NOx), sulphur oxides (SOx), sulphur compounds (H2S), water vapour (H2O), smoke and irritating vapours as products of incomplete combustion.		

Continued on Next Page

Available in French

Fire Fighting Media and Instructions	NAERG96, GUIDE 128, Flammable liquids (Non-polar/Water-immiscible). CAUTION: This product has a moderate flash point above 40ºC: Use of water spray when fighting fire may be inefficient. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. SMALL FIRES: Dry chemical, CO2, water spray or regular foam. LARGE FIRES: Water spray, fog or regular foam. Do not use straight streams. Move containers from fire area if you can do it without risk. Fires Involving Tanks or Car/Trailer Loads: 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. Withdraw immediately in case of rising sound from venting devices or any discolouration of tank. ALWAYS stay away from the ends of tanks. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible withdraw from area and let fire burn. Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

Section 6. Accidental Release Measures

Material Release or Spill	NAERG96, GUIDE 128, Flammable Liquids (Non-polar/ Water-immiscible). ELIMINATE ALL IGNITION SOURCES. Avoid contact. Stop leak if without risk. Contain spill. Absorb with inert absorbents, dry clay, or diatomaceous earth. Avoid inhaling dust of diatomaceous earth for it may contain silica in very fine particle size, making this a potential respiratory hazard. Place used absorbent in closed metal containers for later disposal or burn absorbent in a suitable combustion chamber. DO NOT FLUSH TO SEWERS, STREAMS OR OTHER BODIES OF WATER. Check with applicable jurisdiction for specific disposal requirements of spilled material and empty containers. Notify the appropriate authorities immediately.

Section 7. Handling and Storage

Handling	Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk. DO NOT reuse empty containers without commercial cleaning or reconditioning. Ground/bond line and equipment during pumping or transfer to avoid accumulation of static charge. DO NOT ingest. Do not breathe gas/vapour/spray. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately. Avoid contact with skin and eyes. Practice good personal hygiene. Wash hands after handling and before eating. Launder work clothes frequently. Discard saturated leather goods.
Storage	Store in tightly closed containers in cool, dry, isolated, well-ventilated area, and away from incompatibles. Ground all equipment containing material.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	For normal application, special ventilation is not necessary. If user's operations generate vapours or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Make-up air should always be supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection -	***The selection of personal protective equipment varies, depending upon conditions of use.***
Eyes	Eye protection (i.e., safety glasses, safety goggles and/or face shield) should be determined based on conditions of use. If product is used in an application where splashing may occur, the use of safety goggles and/or a face shield should be considered.
Body	Wear appropriate clothing to prevent skin contact. As a minimum long sleeves and trousers should be worn.
Respiratory	Where concentrations in air may exceed the occupational exposure limits given in Section 2 (and those applicable to your area) and where engineering, work practices or other means of exposure reduction are not adequate, NIOSH approved respirators may be necessary to prevent overexposure by inhalation.
Hands	Wear appropriate chemically protective gloves. When handling hot product ensure gloves are heat resistant and insulated.
Feet	Wear appropriate footwear to prevent product from coming in contact with feet and skin.

Section 9. Physical and Chemical Properties

Physical State and Appearance	Bright oily liquid.	**Viscosity**	1.3-4.1 cSt @ 40ºC (104ºF)
Colour	Clear to yellow / brown. Low sulphur diesel fuels (<0.05 wt % sulphur) are colourless to light yellow (and may be dyed red for taxation purposes). Regular sulphur diesel fuels (0.05-0.50 % sulphur) may be colourless to yellow / brown and are usually dyed red for taxation purposes.	**Pour Point**	Variable, 0ºC to -50ºC (32ºF to -58ºF)
Odour	Petroleum oil like.	**Softening Point**	Not applicable.
Odour Threshold	Not available	**Dropping Point**	Not applicable.
Boiling Point	150-371ºC (302-700ºF)	**Penetration**	Not applicable.
Density	0.85 kg/L @ 15ºC (Water = 1).	**Oil / Water Dist. Coefficient**	Not available
Vapour Density	4.5 (Air = 1)	**Ionicity (in water)**	Not applicable.

Continued on Next Page

Vapour Pressure	1.0 kPa @ 20ºC (7.5 mmHg @ 68ºF).	**Dispersion Properties**	Not available
Volatility	<0.1 (Butyl acetate = 1), less than gasoline.	**Solubility**	Insoluble in cold water, soluble in non-polar hydrocarbon solvents.

Section 10. Stability and Reactivity

Corrosivity	Not available		
Stability	The product is stable under normal handling and storage conditions.	**Hazardous Polymerization**	Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Reactive with oxidizing agents and acids.	**Decomposition Products**	May release COx, NOx, SOx, H2S, H2O, smoke and irritating vapours when heated to decomposition.

Section 11. Toxicological Information

Routes of Entry	Skin contact, eye contact, inhalation, and ingestion.
Acute Lethality	Acute oral toxicity (LD50): 7500 mg/kg (rat).
Chronic or Other Toxic Effects	
Dermal Route:	Skin contact may cause moderate to severe irritation. Repeated exposure would produce drying and cracking or defatting dermatitis.
Inhalation Route:	Inhalation of vapours can cause CNS depression with symptoms of nausea, headaches, vomiting, dizziness, fatigue, light-headedness, reduced coordination, unconciousness and possibly death. Inhalation can also cause irritation of nose and throat.
Oral Route:	Aspiration of liquid drops into the lungs may produce potentially fatal chemical pneumonitis (fluid in the lungs), severe lung damage, or respiratory failure.
Eye Irritation/Inflammation:	Eye contact may cause mild irritation, but no permanent damage.
Immunotoxicity:	Not available
Skin Sensitization:	This product is not expected to be a skin sensitizer, based on the available data and the known hazards of the components.
Respiratory Tract Sensitization:	This product is not expected to be a respiratory tract sensitizer, based on the available data and the known hazards of the components.
Mutagenic:	This product is not expected to be a mutagen, based on the available data and the known hazards of the components.
Reproductive Toxicity:	This product is not expected to be a reproductive hazard, based on the available data and the known hazards of the components.
Teratogenicity/Embryotoxicity:	This product is not expected to be a teratogen or an embryotoxin, based on the available data and the known hazards of the components.
Carcinogenicity (ACGIH):	ACGIH Notice of Intended Changed (2000): proposed A3: animal carcinogen. [Diesel oil]
Carcinogenicity (IARC):	This product is not known to contain any chemicals at reportable quantities that are listed as group 1, 2A or 2B carcinogens by IARC.
Carcinogenicity (NTP):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by NTP.
Carcinogenicity (IRIS):	Not available
Carcinogenicity (OSHA):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by OSHA.
Other Considerations	No additional remark.

Section 12. Ecological Information

Environmental Fate	Not available	**Persistance/ Bioaccumulation Potential**	Not available
BOD5 and COD	Not available	**Products of Biodegradation**	Not available
Additional Remarks	No additional remark.		

Section 13. Disposal Considerations

Waste Disposal Preferred waste management priorities are: (1) recycle or reprocess; (2) incineration with energy recovery; (3) disposal at licensed waste disposal facility. Ensure that disposal or reprocessing is in compliance with government requirements and local disposal regulations. Consult your local or regional authorities.

Section 14. Transport Information

TDG Classification
Diesel Fuel
UN1202
3
III

Special Provisions for Transport Not applicable.

Section 15. Regulatory Information

Other Regulations

This product is acceptable for use under the provisions of WHMIS-CPR. All components of this formulation are listed on the CEPA-DSL (Domestic Substances List).

All components of this formulation are listed on the US EPA-TSCA Inventory.

All components of this product are on the European Inventory of Existing Commercial Chemical Substances (EINECS).

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

Please contact Product Safety for more information.

DSD/DPD (Europe) Not evaluated.

HCS (U.S.A.)
CLASS: Irritating substance.
CLASS: Target organ effects.
CLASS: Combustible liquid having a flash point between 37.8°C (100°F) and 93.3°C (200°F).

ADR (Europe) (Pictograms)
NOT EVALUATED FOR EUROPEAN TRANSPORT

NON ÉVALUÉ POUR LE TRANSPORT EUROPÉEN.

DOT (U.S.A) (Pictograms)

HMIS (U.S.A.)

Health Hazard	2*
Fire Hazard	2
Reactivity	0
Personal Protection	H

NFPA (U.S.A.)

Rating	
0	Insignificant
1	Slight
2	Moderate
3	High
4	Extreme

Section 16. Other Information

References Available upon request.
* Marque de commerce de Petro-Canada - Trademark

Glossary

ACGIH - American Conference of Governmental Industrial Hygienists
ADR - Agreement on Dangerous goods by Road (Europe)
ASTM - American Society for Testing and Materials (
BOD5 - Biological Oxygen Demand in 5 days
CAN/CGA B149.2 Propane Installation Code
CAS - Chemical Abstract Services
CEPA - Canadian Environmental Protection Act
CERCLA - Comprehensive Environmental Response, Compensation and Liability Act
CFR - Code of Federal Regulations
CHIP - Chemicals Hazard Information and Packaging Approved Supply List
COD5 - Chemical Oxygen Demand in 5 days
CPR - Controlled Products Regulations
DOT - Department of Transport
DSCL - Dangerous Substances Classification and Labeling (Europe)
DSD/DPD - Dangerous Substances or Dangerous Preparations Directives (Europe)
DSL - Domestic Substance List
EEC/EU - European Economic Community/European Union
EINECS - European Inventory of Existing Commercial Chemical Substances
EPCRA - Emergency Planning and Community Right to Know Act
FDA - Food and Drug Administration
FIFRA - Federal Insecticide, Fungicide and Rodenticide Act
HCS - Hazardous Communication System
HMIS - Hazardous Material Information System
IARC - International Agency for Research on Cancer
IRIS - Integrated Risk Information System
LD50/LC50 - Lethal Dose/Concentration kill 50%
LDLo/LCLo - Lowest Published Lethal Dose/Concentration
NAERG'96 - North American Emergency Response Guide Book (1996)
NFPA - National Fire Prevention Association
NIOSH - National Institute for Occupational Safety & Health
NPRI - National Pollutant Release Inventory
NSNR - New Substances Notification Regulations (Canada)
NTP - National Toxicology Program
OSHA - Occupational Safety & Health Administration
PEL - Permissible Exposure Limit
RCRA - Resource Conservation and Recovery Act
SARA - Superfund Amendments and Reorganization Act
SD - Single Dose
STEL - Short Term Exposure Limit (15 minutes)
TDG - Transportation Dangerous Goods (Canada)
TDLo/TCLo - Lowest Published Toxic Dose/Concentration
TLm - Median Tolerance Limit
TLV-TWA - Threshold Limit Value-Time Weighted Average
TSCA - Toxic Substances Control Act
USEPA - United States Environmental Protection Agency
USP - United States Pharmacopoeia
WHMIS - Workplace Hazardous Material Information System

For Copy of MSDS
Fuels & Solvents:
Western Canada, telephone: 403-296-4158; fax: 403-296-6551
Ontario & Central Canada, telephone: 1-800-668-0220; fax: 1-800-837-1228
Quebec & Eastern Canada, telephone: 514-640-8308; fax: 514-640-8385

For Product Safety Information: (905) 804-4752

Prepared by Product Safety - TAR on 3/2/2001.

Data entry by Product Safety - JDW.

Continued on Next Page *Available in French*

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

SECTION 1. 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		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	:	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

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.
Obtain medical attention.

If swallowed	:	Rinse mouth with water. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Seek medical advice.
Most important symptoms and effects, both acute and delayed	:	First aider needs to protect himself.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	:	No information available.
Specific hazards during firefighting	:	Cool closed containers exposed to fire with water spray.
Hazardous combustion products	:	Carbon oxides (CO, CO2), nitrogen oxides (NOx), sulphur oxides (SOx), phosphorus oxides (POx), sulphur compounds (H2S), zinc oxides (ZnOx), 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

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/m3	CA AB OEL
		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
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based	72623-86-0	TWA (Mist)	5 mg/m3	CA AB OEL
		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
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based	72623-87-1	TWA (Mist)	5 mg/m3	CA AB OEL
		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
lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based, high viscosity	72623-85-9	TWA (Mist)	5 mg/m3	CA AB OEL
		STEL (Mist)	10 mg/m3	CA AB OEL
		TWAEV	5 mg/m3	CA QC OEL

		(Mist)		
		STEV (Mist)	10 mg/m3	CA QC OEL
		TWA (Inhal-able 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.

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
Incompatible materials	:	Reactive with oxidizing agents and water.
Hazardous decomposition	:	May release COx, H2S, smoke and irritating vapours when

products 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,

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
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

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.ca/msds Western Canada, telephone: 1-800-661-1199; fax: 1-800-378-4518 Ontario & Central Canada, telephone: 1-800-268-5850; fax: 1-800-201-6285 Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 1-800-201-6285 For Product Safety Information: 1 905-804-4752
Prepared by	:	Product Safety: +1 905-804-4752
Revision Date	:	2016/11/15

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

Version 6.5
Revision Date 22.02.2022
Print Date 08.10.2022

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Iron(III) chloride

Product Number : 157740
Brand : SIGALD
CAS-No. : 7705-08-0

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

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : SIGMA-ALDRICH CANADA LTD.
2149 WINSTON PARK DRIVE
OAKVILLE ON L6H 6J8
CANADA

Telephone : +1 905 829-9500
Fax : +1 905 829-9292

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA)
+1-703-527-3887 CHEMTREC (International)
24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with Hazardous Products Regulations (HPR) (SOR/2015-17)

Acute toxicity, Oral (Category 4), H302
Skin irritation (Category 2), H315
Serious eye damage (Category 1), H318

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal word Danger

Hazard statement(s)

H302	Harmful if swallowed.
H315	Causes skin irritation.
H318	Causes serious eye damage.

Precautionary statement(s)

P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P280	Wear protective gloves/ eye protection/ face protection.
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.
P302 + P352	IF ON SKIN: Wash with plenty of water.
P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

- none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms	:	Ferric chloride
Formula	:	Cl_3Fe
Molecular weight	:	162.20 g/mol
CAS-No.	:	7705-08-0
EC-No.	:	231-729-4

Component	Classification	Concentration *
iron(III) chloride		
	Acute Tox. 4; Skin Irrit. 2; Eye Dam. 1; H302, H315, H318 Concentration limits: >= 1 %: Met. Corr. 1, H290;	<= 100 %
* Weight %		

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

In case of eye contact
After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

If swallowed
After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Foam Carbon dioxide (CO2) Dry powder

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture

Hydrogen chloride gas
Iron oxides
Combustible.
Development of hazardous combustion gases or vapours possible in the event of fire.

5.3 Advice for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Store under inert gas.
Tightly closed. Dry.

hygroscopic

Storage class
Storage class (TRGS 510): 8B: Non-combustible, corrosive hazardous materials

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Basis
iron(III) chloride	7705-08-0	TWA	1 mg/m3	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
Remarks	Occupational exposure limit is based on irritation effects and its adjustment to compensate for unusual work schedules is not required			

		TWAEV	1 mg/m3	Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants
		TWA	1 mg/m3	Canada. British Columbia OEL
		STEL	2 mg/m3	Canada. British Columbia OEL
		TWA	1 mg/m3	USA. ACGIH Threshold Limit Values (TLV)

8.2 Exposure controls

Appropriate engineering controls
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

Skin protection
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

Body Protection
protective clothing

Respiratory protection
required when dusts are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: solid
b)	Odor	pungent
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point: 306 °C (583 °F) - (ECHA)
f)	Initial boiling point and boiling range	Decomposes below the boiling point.
g)	Flash point	()Not applicable
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	does not ignite - A.10. (Regulation (EC) No 440/2008, Annex A)
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	< 1 hPa at 20 °C (68 °F)
l)	Vapor density	5.60 - (Air = 1.0)
m)	Density	2.800 g/cm3
	Relative density	2.8925 °C
n)	Water solubility	soluble
o)	Partition coefficient: n-octanol/water	No data available
p)	Autoignition temperature	No data available
q)	Decomposition temperature	316 °C (601 °F) -
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	none

9.2 Other safety information

Relative vapor density	5.60 - (Air = 1.0)

SECTION 10: Stability and reactivity

10.1 Reactivity

The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions

Risk of explosion with:
Alkali metals
Ethylene oxide
Violent reactions possible with:

Aluminum
with
Heat.
Generates dangerous gases or fumes in contact with:
Water

10.4 Conditions to avoid

no information available

10.5 Incompatible materials

Copper, Light metalsMetals

10.6 Hazardous decomposition products

In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Mouse - female - 1,300 mg/kg
Remarks: (ECHA)
Inhalation: No data available
LD50 Dermal - Rat - male and female - > 2,000 mg/kg
(OECD Test Guideline 402)
Remarks: (in analogy to similar products)
The value is given in analogy to the following substances: iron dichloride
No data available

Skin corrosion/irritation
Skin - Rabbit
Result: Irritating to skin. - 4 h
(OECD Test Guideline 404)
Remarks: (in analogy to similar products)
The value is given in analogy to the following substances: Ferrous sulfate heptahydrateThe value is given in analogy to the following substances: Iron(II) sulphate

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Causes serious eye damage.
(OECD Test Guideline 405)
Remarks: (in analogy to similar products)
The value is given in analogy to the following substances: iron dichloride

Respiratory or skin sensitization
Local lymph node assay (LLNA) - Mouse
Result: negative
(OECD Test Guideline 429)
Remarks: (in analogy to similar products)

Germ cell mutagenicity
Test Type: Ames test
Method: OECD Test Guideline 471
Result: negative
Test Type: In vitro mammalian cell gene mutation test
Test system: mouse lymphoma cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
The value is given in analogy to the following substances: Ferrous sulfate heptahydrateTest Type: Mutagenicity (mammal cell test): micronucleus.
Test system: Chinese hamster lung cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 487
Result: negative

Test Type: In vivo micronucleus test
Species: Mouse

Application Route: Oral

Result: negative
Remarks: (ECHA)

Carcinogenicity
No data available

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

RTECS: LJ9100000
spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, Overdose of iron compounds may have a corrosive effect on the gastrointestinal mucosa and be followed by necrosis, perforation, and stricture formation. Several hours may elapse before symptoms that can include

epigastric pain, diarrhea, vomiting, nausea, and hematemesis occur. After apparent recovery a person may experience metabolic acidosis, convulsions, and coma hours or days later. Further complications may develop leading to acute liver necrosis that can result in death due to hepatic coma.
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity
No data available

12.2 Persistence and degradability
Biodegradability Result: - Readily biodegradable.

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties
No data available

12.7 Other adverse effects
No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

TDG
UN number: 1773 Class: 8 Packing group: III
Proper shipping name: FERRIC CHLORIDE, ANHYDROUS
Labels: 8
ERG Code: 157
Marine pollutant: no

IMDG
UN number: 1773 Class: 8 Packing group: III EMS-No: F-A, S-B
Proper shipping name: FERRIC CHLORIDE, ANHYDROUS
Marine pollutant : yes

IATA
UN number: 1773 Class: 8 Packing group: III
Proper shipping name: Ferric chloride, anhydrous

SECTION 15: Regulatory information

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR.

SECTION 16: Other information

Further information
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

The branding on the header and/or footer of this document may temporarily not visually match the product purchased as we transition our branding. However, all of the information in the document regarding the product remains unchanged and matches the product ordered. For further information please contact mlsbranding@sial.com.

Version: 6.5 Revision Date: 22.02.2022 Print Date: 08.10.2022

Fortis Extra, Fortan Extra, Fortis Clear

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations And According To The Hazardous Products Regulation (February 11, 2015).
Revision Date: 01/07/2019 Date of Issue: 09/01/2015 Supersedes Date: 10/29/2018 Version: 3.1

SECTION 1: IDENTIFICATION

Product Identifier

Product Form: Mixture

Product Name: Fortis Extra, Fortan Extra, Fortis Clear

Synonyms: Fortis Extra 100, Fortis Extra 70, Fortis Clear 100, Fortis Clear 80, Fortis Clear 70, Fortan Extra 40, Fortan Extra 35, Fortan Extra 25, Fortan Extra 15

Intended Use of the Product

A booster sensitive emulsion explosive. For professional use only.

Name, Address, and Telephone of the Responsible Party

Canada:
Orica Canada Inc.
301 Rue Hotel-de-Ville
Brownsburg-Chatham, QC
J8G 3B5
For SDS Requests:
1-855-26-ORICA (1-855-266-7422)
sds.na@orica.com
www.oricaminingservices.com

USA:
Orica USA Inc.
33101 E. Quincy Avenue
Watkins, CO 80137-9406
For SDS Requests: 1-855-26-ORICA (1-855-266-7422)
sds.na@orica.com

Mexico:
Orica Mexico Inc.
Boulevard Harold R. Pape No. 350
Colonia Telefonistas
Monclova, Coahuila.
C.P. 25758
For SDS Requests: 1-855-26-ORICA (1-855-266-7422)
sds.na@orica.com

Emergency Telephone Number

Emergency Number : **Canada:** 1-877-561-3636 (Orica Transportation Emergency Response)
USA: 1-800-424-9300 (CHEMTREC)
Mexico: 01-800- 002-1400

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 MEXICO CALL:** 01-800- 002-1400. **IN THE U.S.:** FOR LOST, STOLEN, OR MISPLACED EXPLOSIVES CALL: BATF **1-800-800-3855.** FORM ATF F 5400.5 MUST BE COMPLETED AND LOCAL AUTHORITIES (STATE/MUNICIPAL POLICE, ETC.) MUST BE ADVISED.

SECTION 2: HAZARDS IDENTIFICATION

Classification of the Substance or Mixture

GHS-US/CA Classification

The explosive classification below only applies to US 29 CFR 1910.1200 (HCS/HazCom 2012). The explosive classification is excluded from Canada Hazardous Products Regulations (HPR, SOR/2015-17), it is regulated under the Canada Explosives Act (R.S.C., 1985, c. E-17)

Expl. 1.5	H205
Flam. Liq. 1	H224
Ox. Liq. 3	H272
Acute Tox. 4 (Oral)	H302
Eye Irrit. 2A	H319
Carc. 1	H350
STOT RE 2	H373

Aquatic Acute 2	H401
Aquatic Chronic 3	H412

Full text of hazard classes and H-statements : see section 16

Label Elements

GHS-US/CA Labeling

Any labeling elements (pictograms, signal word, hazard, and precautionary statements) related to explosive classifications apply to the OSHA Hazard Communication Standard (HCS, 29 CFR 1910.1200) only and are excluded from Canada's Hazardous Products Regulations (HPR, SOR/2015-17)

Hazard Pictograms (GHS-US/CA) :

Signal Word (GHS-US/CA) : Danger

Hazard Statements (GHS-US/CA) :
H224 - Extremely flammable liquid and vapor.
H272 - May intensify fire; oxidizer.
H302 - Harmful if swallowed.
H319 - Causes serious eye irritation.
H350 - May cause cancer.
H373 - May cause damage to organs (blood, liver, spleen, thymus) through prolonged or repeated exposure.
H401 - Toxic to aquatic life.
H412 - Harmful to aquatic life with long lasting effects.

Precautionary Statements (GHS-US/CA) :
P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P220 - Keep away from clothing and other combustible materials.
P233 - Keep container tightly closed.
P240 - Ground/bond container and receiving equipment.
P241 - Use explosion-proof electrical, ventilating, and lighting equipment.
P242 - Use only non-sparking tools.
P243 - Take action to prevent static discharges.
P260 - Do not breathe vapors, mist, or spray.
P264 - Wash hands, forearms, and other exposed areas thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P273 - Avoid release to the environment.
P280 - Wear protective gloves, protective clothing, and eye protection.
P301+P312 - IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with 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.
P314 - Get medical advice/attention if you feel unwell.
P330 - Rinse mouth.
P337+P313 - If eye irritation persists: Get medical advice/attention.
P370+P378 - In case of fire: Do NOT attempt to fight fire.
P403+P235 - Store in a well-ventilated place. Keep cool.
P405 - Store locked up.
P501 - Dispose of contents/container in accordance with the Explosives Act of Canada and the provisions of the Bureau of Alcohol, Tobacco and Firearms regulations contained in 27 CFR part 555.

Other Hazards

Exposure may aggravate pre-existing eye, skin, or respiratory conditions. 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. Energetic effects (blast effects, heat, noise, and shrapnel) from functioning of the product can cause serious physical injuries.

Unknown Acute Toxicity (GHS-US/CA)

No data available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Mixture

Name	Product Identifier	% *
Ammonium nitrate	(CAS-No.) 6484-52-2	70 - 85
Petroleum	(CAS-No.) 8002-05-9	3 - 7
Sodium nitrite	(CAS-No.) 7632-00-0	0.05 - 1

*Percentages are listed in weight by weight percentage (w/w%) for liquid and solid ingredients. Gas ingredients are listed in volume by volume percentage (v/v%).

SECTION 4: FIRST AID MEASURES

Description of First-aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

Inhalation: When symptoms occur: go into open air and ventilate suspected area. Obtain medical attention if breathing difficulty persists.

Skin Contact: IF ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Obtain medical attention if irritation develops or persists.

Eye Contact: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention.

Ingestion: Rinse mouth. Do NOT induce vomiting. Obtain medical attention.

Most Important Symptoms and Effects Both Acute and Delayed

General: Harmful if swallowed. Causes serious eye irritation. May cause cancer. May cause damage to organs (blood, liver, spleen, thymus) through prolonged or repeated exposure.

Inhalation: Prolonged exposure may cause irritation.

Skin Contact: Prolonged exposure may cause skin irritation.

Eye Contact: Contact causes severe irritation with redness and swelling of the conjunctiva.

Ingestion: This material is harmful orally and can cause adverse health effects or death in significant amounts. 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 Symptoms: May cause cancer. May cause damage to organs (blood, liver, spleen, thymus) through prolonged or repeated exposure.

Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention. If medical advice is needed, have product container or label at hand. Causes methemoglobinemia – emergency response should treat appropriately, such as by intravenous administration of methylene blue.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: DO NOT FIGHT FIRES INVOLVING EXPLOSIVES. 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: DO NOT FIGHT FIRES INVOLVING EXPLOSIVES. Attempts to smother a fire involving this product will be ineffective as it is its own oxygen source. Smothering this product could lead to decomposition and explosion. This product is more sensitive to detonation if contaminated with organic or oxidizable material or if heated while confined. Unless the mass of product on fire is flooded with water, re-ignition is possible.

Special Hazards Arising From the Substance or Mixture

Fire Hazard: Explosive, could cause fire and secondary explosions. Extremely flammable liquid and vapor. May intensify fire; oxidizer.

Explosion Hazard: Explosives, Division 1.5 - Very insensitive explosives that have a mass explosion hazard. Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries. May form flammable or explosive vapor-air mixture.

Reactivity: Explosive, insensitive but has a mass explosion hazard. Oxidizer: increases the burning rate of combustible materials. Hazardous reactions may occur on contact with certain chemicals. Refer to incompatible materials.

Advice for Firefighters

Precautionary Measures Fire: This product is an explosive with a mass explosion hazard. DO NOT FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS. Exercise caution when fighting any chemical fire.

Firefighting Instructions: DO NOT ATTEMPT TO FIGHT FIRE. Immediately evacuate all personnel from the area to a safe distance. Guard against re-entry. Thermal decomposition can lead to release of irritating gases and vapors.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection. When controlling fire before involvement of explosives, fire-fighters should wear positive pressure self-containing breathing apparatus (SCBA) and full turnout gear.

Hazardous Combustion Products: Carbon oxides (CO, CO_2). Nitrogen oxides. Ammonium nitrate fumes. Ammonia. Hydrocarbons. Sulfur compounds. Sulfur oxides. Sodium oxides. Acrid smoke and irritating fumes.

Other Information: Do not allow run-off from fire fighting to enter drains or water courses.

Reference to Other Sections

Refer to Section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Evacuate danger area. Avoid all contact with skin, eyes, or clothing. Do not breathe vapor, mist or spray. Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking. Use special care to avoid static electric charges. Keep away from combustible material.

For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protective equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel. Evacuate danger area. Stop leak if safe to do so.

For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Ventilate area. Eliminate ignition sources. Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit.

Environmental Precautions

Prevent entry to sewers and public waters. Avoid release to the environment.

Methods and Materials for Containment and Cleaning Up

For Containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Absorb and contain with inert material. Place contents in suitable container for disposal. As an immediate precautionary measure, isolate spill or leak area in all directions. Use only non-sparking tools.

Methods for Cleaning Up: Absorb and/or contain spill with inert material. Do not take up in combustible material such as: saw dust or cellulosic material. Use only non-sparking tools. 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.

Reference to Other Sections

See Section 8 for exposure controls and personal protection and Section 13 for disposal considerations.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling

Additional Hazards When Processed: Handle empty containers with care because residual vapors are flammable. May cause or intensify fire; oxidizer. Under specific conditions of acidity and in the presence of amines, this product has the potential to form carcinogenic nitrosamine compounds.

Precautions for Safe Handling: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Take precautionary measures against static discharge. Use only non-sparking tools. Keep away from extremely high or low temperatures, ignition sources, and incompatible materials. - No smoking. Do not breathe mist, spray, vapors, fume. Avoid contact with skin, eyes and clothing. Use appropriate personal protective equipment (PPE).

Hygiene Measures: This product is an explosive and should only be used under the supervision of trained and licensed personnel. Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work.

Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Store as defined in the Explosives Act of Canada and the provisions of the Bureau of Alcohol, Tobacco and Firearms regulations contained in 27 CFR Part 555. Proper grounding procedures to avoid static electricity should be followed. Use approved electrical, ventilating, and lighting equipment.

Storage Conditions: Store under moderate temperatures recommended by competent authority. Store under dry conditions in a well ventilated magazine that has been approved for explosive storage. Do NOT store explosives in a detonator magazine. Keep away from heat, spark and flames. Keep containers closed. Explosives should be kept well away from initiating explosives; protected from physical damage; separated from oxidizing materials, combustibles, and sources of heat. Keep/Store away from extremely high or low temperatures, ignition sources, heat, combustible materials, incompatible materials. Store locked up/in a secure area.

Incompatible Materials: Reducing agents, strong acids and bases, metal powders, combustible materials, chromates, zinc, copper and copper alloys, chlorates, oils and lubricants, halogens, halogenated compounds, ammonium salts, and amines.

Special Rules on Packaging: Keep only in the original container.

Specific End Use(s)

A booster sensitive emulsion explosive. For professional use only.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

For substances listed in section 3 that are not listed here, there are no established Exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), AIHA (WEEL), NIOSH (REL), OSHA (PEL), or Canadian provincial governments.

Petroleum (8002-05-9)		
USA OSHA	OSHA PEL (TWA) (mg/m³)	2000 mg/m³
USA OSHA	OSHA PEL (TWA) (ppm)	500 ppm
USA NIOSH	NIOSH REL (TWA) (mg/m³)	350 mg/m³
USA NIOSH	NIOSH REL (ceiling) (mg/m³)	1800 mg/m³ (15 min)
USA IDLH	US IDLH (ppm)	1100 ppm (10% LEL)

Exposure Controls

Appropriate Engineering Controls: Product to be handled in a closed system and under strictly controlled conditions. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure adequate ventilation, especially in confined areas. Proper grounding procedures to avoid static electricity should be followed. Use approved electrical equipment. Gas detectors should be used when flammable gases or vapors may be released. Ensure all national/local regulations are observed.

Personal Protective Equipment: Gloves. Protective clothing. Eye protection. Insufficient ventilation: wear respiratory protection.

Materials for Protective Clothing: Chemically resistant materials and fabrics. Wear fire/flame resistant/retardant clothing.

Hand Protection: Wear protective gloves.

Eye and Face Protection: Chemical safety goggles or safety glasses with side shield.

Skin and Body Protection: Wear suitable protective clothing.

Respiratory Protection: If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn. In case of inadequate ventilation, oxygen deficient atmosphere, or where exposure levels are not known wear approved respiratory protection.

Environmental Exposure Controls: Avoid release to the environment.

Other Information: When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	:	Liquid
Appearance	:	Opaque,Viscous liquid
Odor	:	Slight diesel or odorless
Odor Threshold	:	Not available
pH	:	3 - 6
Evaporation Rate	:	Not available
Melting Point	:	Not available
Freezing Point	:	Not available
Boiling Point	:	Not available
Flash Point	:	Not available
Auto-ignition Temperature	:	230 - 265 °C (446 - 509 °F)
Decomposition Temperature	:	210 °C (410 °F)
Flammability (solid, gas)	:	Not applicable
Lower Flammable Limit	:	Not available
Upper Flammable Limit	:	Not available
Vapor Pressure	:	0 mm Hg (at 20 °C)
Relative Vapor Density at 20°C	:	Not available
Relative Density	:	0.9 - 1.35
Density	:	0.9 - 1.35 g/cc
Specific Gravity	:	Not available
Solubility	:	Water: Slightly soluble in water Organic solvent: Slighty soluble in standard organic solvents
Partition Coefficient: N-Octanol/Water	:	Not available
Viscosity	:	Not available
Oxidizing Properties	:	Oxidizing liquid 3 - May intensify fire; oxidizer.
Explosive Properties	:	Explosives, Division 1.5 - Very insensitive explosives that have a mass explosion hazard

SECTION 10: STABILITY AND REACTIVITY

Reactivity: Explosive, insensitive but has a mass explosion hazard. Oxidizer: increases the burning rate of combustible materials. Hazardous reactions may occur on contact with certain chemicals. Refer to incompatible materials.

Chemical Stability: Stable under recommended handling and storage conditions. Extremely flammable liquid and vapor. May form flammable or explosive vapor-air mixture. May intensify fire; oxidizer. Extreme risk of explosion by shock, friction, fire or other sources of ignition.

Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

Conditions to Avoid: Keep away from open flames, hot surfaces and sources of ignition. Direct sunlight, extremely high or low temperatures, ignition sources, combustible materials, incompatible materials.

Incompatible Materials: Reducing agents, strong acids and bases, metal powders, combustible materials, chromates, zinc, copper and copper alloys, chlorates, oils and lubricants, halogens, halogenated compounds, ammonium salts, and amines..

Hazardous Decomposition Products: Under normal conditions of storage and use, hazardous decomposition products should not be produced. At temperatures above 210°C, decomposition may be explosive, especially if confined.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on Toxicological Effects - Product

Acute Toxicity (Oral): Oral: Harmful if swallowed.

Acute Toxicity (Dermal): Not classified

Acute Toxicity (Inhalation): Not classified

LD50 and LC50 Data:

Fortis Extra, Fortis Clear	
ATE US/CA (oral)	1,976.71 mg/kg body weight

Skin Corrosion/Irritation: Not classified

pH: 3 - 6

Eye Damage/Irritation: Causes serious eye irritation.

pH: 3 - 6

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Carcinogenicity: May cause cancer.

Specific Target Organ Toxicity (Repeated Exposure): May cause damage to organs (blood, liver, spleen, thymus) through prolonged or repeated exposure.

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: Prolonged exposure may cause irritation.

Symptoms/Injuries After Skin Contact: Prolonged exposure may cause skin irritation.

Symptoms/Injuries After Eye Contact: Contact causes severe irritation with redness and swelling of the conjunctiva.

Symptoms/Injuries After Ingestion: This material is harmful orally and can cause adverse health effects or death in significant amounts. 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 Symptoms: May cause cancer. May cause damage to organs (blood, liver, spleen, thymus) through prolonged or repeated exposure.

Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

Ammonium nitrate (6484-52-2)	
LD50 Oral Rat	2217 mg/kg
LC50 Inhalation Rat	> 88.8 mg/l/4h

Petroleum (8002-05-9)	
LD50 Oral Rat	> 5000 mg/kg
LD50 Dermal Rabbit	> 2000 mg/kg

Sodium nitrite (7632-00-0)	
LD50 Oral Rat	85 mg/kg
LC50 Inhalation Rat	5.5 mg/l/4h

Petroleum (8002-05-9)	
IARC Group	3

SECTION 12: ECOLOGICAL INFORMATION

Toxicity

Ecology - General: Toxic to aquatic life. Harmful to aquatic life with long lasting effects.

Ammonium nitrate (6484-52-2)	
LC50 Fish 1	542 mg/l
EC50 Daphnia 1	555 mg/l

Petroleum (8002-05-9)	
LC50 Fish 1	7.1 mg/l (Species: Pimephales promelas, Exposure time 96 h)
LC50 Other Aquatic Organisms 1	2.7 mg/l LL50 96 hr (Kelp forest mysid shrimp)
EC50 Daphnia 1	6.9 mg/l (Exposure time: 48 h)

Sodium nitrite (7632-00-0)	
LC50 Fish 1	0.19 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through])
LC50 Fish 2	0.092 - 0.13 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through])

Persistence and Degradability

Fortis Extra, Fortis Clear	
Persistence and Degradability	May cause long-term adverse effects in the environment.

Bioaccumulative Potential

Fortis Extra, Fortis Clear	
Bioaccumulative Potential	Not established.

Ammonium nitrate (6484-52-2)	
BCF Fish 1	(no bioaccumulation expected)
Log Pow	-3.1 (at 25 °C)

Sodium nitrite (7632-00-0)	
Log Pow	-3.7 (at 25 °C)

Mobility in Soil Not available

Other Adverse Effects

Other Information: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Recommendations: Destroy and dispose of in accordance with applicable local, state, provincial, territorial, federal and international regulations. Consult with an Orica technical representative.

Ecology - Waste Materials: Avoid release to the environment. This material is hazardous to the aquatic environment. Keep out of sewers and waterways.

SECTION 14: TRANSPORT INFORMATION

The shipping description(s) stated herein were prepared in accordance with certain assumptions at the time the SDS was authored, and can vary based on a number of variables that may or may not have been known at the time the SDS was issued.

In Accordance with DOT

Proper Shipping Name : EXPLOSIVE, BLASTING, TYPE E
Hazard Class : 1.5D
Identification Number : UN0332
Label Codes : 1.5D

ERG Number : 112

In Accordance with IMDG

Proper Shipping Name : EXPLOSIVE, BLASTING, TYPE E (AGENT, BLASTING, TYPE E)
Hazard Class : 1.5D
Identification Number : UN0332
Label Codes : 1.5D

EmS-No. (Fire) : F-B
EmS-No. (Spillage) : S-Y

In Accordance with IATA

Proper Shipping Name : EXPLOSIVE, BLASTING, TYPE E
Hazard Class : 1.5D
Identification Number : UN0332
Label Codes : 1.5D

ERG Code (IATA) : 1L

In Accordance with TDG

Proper Shipping Name : EXPLOSIVE, BLASTING, TYPE E
Hazard Class : 1.5D
Identification Number : UN0332
Label Codes : 1.5D

Packing Group : II

SECTION 15: REGULATORY INFORMATION

US Federal Regulations

Fortis Extra, Fortis Clear	
SARA Section 311/312 Hazard Classes	Physical hazard - Explosive Physical hazard - Flammable (gases, aerosols, liquids, or solids) Physical hazard - Oxidizer (liquid, solid or gas) Health hazard - Acute toxicity (any route of exposure) Health hazard - Serious eye damage or eye irritation Health hazard - Carcinogenicity Health hazard - Specific target organ toxicity (single or repeated exposure)

Ammonium nitrate (6484-52-2)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Petroleum (8002-05-9)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Sodium nitrite (7632-00-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313	
EPA TSCA Regulatory Flag	S - S - indicates a substance that is identified in a proposed or final Significant New Uses Rule.
CERCLA RQ	100 lb
SARA Section 313 - Emission Reporting	1 %

US State Regulations

Ammonium nitrate (6484-52-2)
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List

Petroleum (8002-05-9)
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List

Sodium nitrite (7632-00-0)
U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List U.S. - Pennsylvania - RTK (Right to Know) List

Canadian Regulations

Ammonium nitrate (6484-52-2)
Listed on the Canadian DSL (Domestic Substances List)

Petroleum (8002-05-9)
Listed on the Canadian DSL (Domestic Substances List)

Sodium nitrite (7632-00-0)
Listed on the Canadian DSL (Domestic Substances List)

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Date of Preparation or Latest Revision : 01/07/2019

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200 and Canada's Hazardous Products Regulations (HPR) SOR/2015-17.

GHS Full Text Phrases:

Expl. 1.5	Explosive Category 1.5
H205	May mass explode in fire
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 2	Hazardous to the aquatic environment - Acute Hazard Category 2
Aquatic Chronic 3	Hazardous to the aquatic environment - Chronic Hazard Category 3
Carc. 1	Carcinogenicity, Category 1
Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
Flam. Liq. 1	Flammable liquids Category 1
Ox. Liq. 3	Oxidizing liquids Category 3
STOT RE 2	Specific target organ toxicity (repeated exposure) Category 2
H224	Extremely flammable liquid and vapor
H272	May intensify fire; oxidizer
H302	Harmful if swallowed
H319	Causes serious eye irritation
H350	May cause cancer
H373	May cause damage to organs through prolonged or repeated exposure
H401	Toxic to aquatic life
H412	Harmful to aquatic life with long lasting effects

All information contained herein and in any supporting documents is provided for informational purposes only and is as accurate and up-to-date as possible at the time of publication. Since Orica and its related entities cannot anticipate or control the conditions under which this information may be used, users must review this information in the specific context of the intended application and must make their own determinations as to the suitability of this information for such users' purposes. To the maximum extent permitted by law, nothing contained herein and in any supporting documents shall be deemed to be an express or implied warranty, and Orica expressly disclaims all warranties and representations, INCLUDING WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Orica will not be responsible for any loss whatsoever resulting from any use or reliance upon this information.

NA GHS SDS 2015 (Can, US)

SAFETY DATA SHEET

SECTION 1. IDENTIFICATION

Product identifier used on the label:

ORIGINAL GAS LINE ANTI-FREEZE

Stock No. : 426

Recommended use of the chemical and restrictions on use

: Gas line Anti-Freeze
Recommended restrictions: None known. .

Chemical family : Pure substance; saturated primary aliphatic alcohol.

Name, address, and telephone number of the manufacturer:

Kleen-Flo Tumbler Ind. Ltd.

75 Advance Blvd.

Brampton, ON,
L6T 4N1
Telephone # : 905-793-4311

24 Hr. Emergency Tel # : CANUTEC: 613-996-6666

Guidelines for SDS Use: The product described in this SDS is a consumer product. It is safe for use by consumers as described on the product label under normal foreseeable conditions. This SDS is designed to provide additional valuable safety and handling information.

SECTION 2. HAZARDS IDENTIFICATION

Classification of the chemical

Clear colourless liquid. Alcohol odour.

OSHA: This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).

Hazard classification :
Flammable liquid - Category 2
Acute toxicity - Oral - Category 3
Acute toxicity - Dermal - Category 3
Acute toxicity - Inhalation - Category 3
Eye irritation - Category 2A
Reproductive toxicity - Category 2
Specific target organ toxicity, single exposure - Category 1

Label elements

Hazard pictogram(s)

Signal Word

DANGER!

Hazard statement(s)

Highly flammable liquid and vapour
Toxic if swallowed, in contact with skin or if inhaled.
Causes serious eye irritation.
Suspected of damaging the unborn child if inhaled.
Causes damage to the optic nerve and central nervous system.

Precautionary statement(s)

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat, sparks and open flame. - No smoking.
Keep container tightly closed.
Ground/Bond container and receiving equipment.
Use explosion-proof electrical and ventilating equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Wear protective gloves/clothing and eye/face protection.
Wash hands and face thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Do not breathe fumes, mists or vapours.
In case of fire: Use water fog, dry chemical, CO2 or 'alcohol' foam for extinction.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
Get medical attention/advice if you feel unwell.
IF SWALLOWED: Immediately call a POISON CENTRE or doctor/physician.
Rinse mouth.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Call a POISON CENTRE or doctor/physician.
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.
Store in a well-ventilated place. Keep cool.
Store locked up.
Dispose of contents/container in accordance with local regulation.

Other hazards

Other hazards which do not result in classification:
May cause mild skin irritation. May be harmful if absorbed through the skin. May be harmful if inhaled. Prolonged or repeated overexposure could cause adverse liver effects. Burning produces obnoxious and toxic fumes.

Environmental precautions: Avoid release to the environment.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance

Chemical name	Common name and synonyms	CAS #	Concentration
Methanol	Carbinol Methyl hydrate Methyl alcohol	67-56-1	**80-100%**

SECTION 4. FIRST-AID MEASURES

Description of first aid measures

Ingestion : Call a physician or poison control centre immediately. Do not induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person.

Inhalation : If inhaled, move to fresh air. If breathing is difficult, give oxygen by qualified medical personnel only. If breathing has stopped, give artificial respiration. Get medical attention.

Skin contact : Immediately flush skin with running water for at least 15 minutes, while removing contaminated clothing. Get medical attention. Wash contaminated clothing before re-use.

Eye contact : Immediately flush eyes with running water for at least 20 minutes. Remove contact lenses if present and easy to do. Get medical attention.

SAFETY DATA SHEET

Most important symptoms and effects, both acute and delayed

: Toxic if swallowed. Causes serious eye irritation. Symptoms may include redness, pain, tearing and conjunctivitis. Suspected of damaging the unborn child. May cause fetotoxic (toxic to the fetus during the latter stages of pregnancy, often through the placenta) and teratogenic effects (causing malformations of the fetus), based on animal information. Causes damage to the optic nerve and central nervous system. May be harmful if inhaled. May be harmful if absorbed through the skin. May cause mild skin irritation.
Prolonged or repeated overexposure could cause adverse liver effects.

Indication of any immediate medical attention and special treatment needed

: Treat symptomatically. Immediate medical attention is required. This product is a CNS depressant.
Contains methanol. 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. Medical supervision for minimum 48 hours. Symptoms and signs are usually limited to the Central Nervous System (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.

Administration of ethanol can slow the metabolism of methanol, thus reducing the potential for harmful effects.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media

: Extinguishing media - small fires: Use water fog or fine spray, foams, carbon dioxide or dry chemical.
Extinguishing media - large fires: AFFF(R) [Aqueous Film Forming Foam (alcohol resistant)] type with either a 3% or 6% foam proportioning system; Water spray (see note in Unsuitable Extinguishing Media).

Unsuitable extinguishing media

: Do not use a solid water stream as it may scatter and spread fire. Water may be ineffective because it may not cool product below the flashpoint.
General purpose synthetic foams or protein foams.

Special hazards arising from the substance or mixture / Conditions of flammability

: Highly flammable liquid and vapour. Will be ignited by heat, sparks, flame, or other ignition sources. Burns with a nearly invisible flame. Vapours are heavier than air and collect in confined and low-lying areas. Closed containers may rupture if exposed to excess heat or flame due to a build-up of internal pressure.

Flammability classification (OSHA 29 CFR 1910.106)

: Flammable liquid - Category 2

Hazardous combustion products

: Carbon oxides; formaldehyde; Other unidentified organic compounds.
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Special protective equipment and precautions for firefighters

Protective equipment for fire-fighters

: Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode.

Special fire-fighting procedures

: Fight fires from a safe distance. Move containers from fire area if safe to do so. Water spray may be useful in cooling equipment exposed to heat and flame.

SAFETY DATA SHEET

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

: Restrict access to area until completion of clean-up. Ensure clean-up is conducted by trained personnel only. Individuals involved in the cleanup must wear appropriate personal protective equipment. For personal protection see section 8.

Environmental precautions : Ensure spilled product does not enter drains, sewers, waterways, or confined spaces. For large spills, dike the area to prevent spreading.

Methods and material for containment and cleaning up

: Ventilate the area. Use only non-sparking tools and equipment in the clean-up process. Contain and absorb spilled liquid with non-combustible, inert absorbent material (e.g. sand), then place absorbent material into a container for later disposal (see Section 13). Contaminated absorbent material may pose the same hazards as the spilled product. Notify the appropriate authorities as required. Do not use combustible absorbents, such as sawdust.

Special spill response procedures

: If a spill/release in excess of the EPA reportable quantity is made into the environment, immediately notify the national response center in the United States (phone: 1-800-424-8802).
US CERCLA Reportable quantity (RQ): Methanol. (5000 lbs / 2270 kg)

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. Use only in well-ventilated areas. Wear suitable protective equipment during handling. Do not ingest or swallow. Avoid breathing vapours. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Keep away from heat, sparks and open flame. - No smoking. Ground/Bond container and receiving equipment. Use explosion-proof electrical and ventilating equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Avoid contact with incompatible materials. Keep containers tightly closed when not in use. Empty containers retain residue (liquid and/or vapour) and can be dangerous. Do not use pressure to empty drums. Do not cut, weld, drill or grind on or near this container. Follow labeled warnings even after container is emptied. For rescue and maintenance work in storage tanks use self-contained breathing apparatus. Tanks must be grounded and vented and should have vapour emission controls. Tanks must be diked. Anhydrous methanol is non-corrosive to most metals at ambient temperatures except lead and magnesium. However coatings of copper (or copper alloys), zinc (including galvanized steel) or aluminum are unsuitable for storage as they are attacked slowly. Mild steel is the recommended construction material.

Conditions for safe storage : Store in a cool, dry, well-ventilated area. Store away from incompatible materials. Store locked up. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks. No smoking in the area. Have appropriate fire extinguishers and spill clean-up equipment in or near storage area. Equip bulk storage tank with overflow protection such as high level alarms or secondary containment. Attacks some elastomers, rubber, plastic and coatings.

Incompatible materials : Acids; Powdered metals; Alkali metals; Isocyanates; Strong oxidizers (e.g. Chlorine, Peroxides, etc.).

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SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits:

Chemical Name	ACGIH TLV		OSHA PEL	
	TWA	STEL	PEL	STEL
Methanol	200 ppm (skin)	250 ppm (skin)	200 ppm (260 mg/m³)	N/Av

NIOSH IDLH (Immediately Dangerous to Life or Health Concentrations): 6000 ppm

Exposure controls

Ventilation and engineering measures

: Ensure adequate ventilation, especially in confined areas. Use general or local exhaust ventilation to maintain air concentrations below recommended exposure limits. Use explosion-proof electrical and ventilating equipment.

Respiratory protection : Respiratory protection is required if the concentrations exceed the TLV.
NIOSH-approved respirators are recommended.
Cartridge type respirators are not recommended.
Wear self-contained breathing apparatus with a full face piece operated in the positive pressure mode.
Advice should be sought from respiratory protection specialists. Respirators should be selected based on the form and concentration of contaminants in air, and in accordance with OSHA (29 CFR 1910.134) or CSA Z94.4-02.

Skin protection : Wear impervious gloves, such as butyl rubber.
Unsuitable material: Natural rubber; Neoprene.; Nitrile rubber; Polyethylene; polyvinyl alcohol; Polyvinylchloride.
Advice should be sought from glove suppliers. Where extensive exposure to product is possible, use resistant coveralls, apron and boots to prevent contact.

Eye / face protection : Chemical splash goggles are recommended. A full face shield may also be necessary.

Other protective equipment : An eyewash station and safety shower should be made available in the immediate working area. Other equipment may be required depending on workplace standards.

General hygiene considerations

: Avoid breathing vapour or mist. Avoid contact with skin, eyes and clothing. Do not eat, drink or smoke when using this product. Upon completion of work, wash hands before eating, drinking, smoking or use of toilet facilities. Remove soiled clothing and wash it thoroughly before reuse. Handle in accordance with good industrial hygiene and safety practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Clear colourless liquid.

Odour : Alcohol

Odour threshold : 50-100 ppm

pH : N/Av

Melting/Freezing point : - 97.8°C (- 144°F)

Initial boiling point and boiling range

: 64.5°C (148°F)

Flash point : 12°C (53.6°F)

Flashpoint (Method) : closed cup

Evaporation rate (BuAe = 1) : <1

Flammability (solid, gas) : Not applicable.

Lower flammable limit (% by vol.)

: 7.3%

Upper flammable limit (% by vol.)

: 36%

Oxidizing properties	:	None.
Explosive properties	:	Not expected to be sensitive to mechanical impact. May be sensitive to static discharge. Vapours in the flammable range may be ignited by a static discharge of sufficient energy.
Vapour pressure	:	92 mmHg @ 20°C
Vapour density	:	>1.1
Relative density / Specific gravity	:	0.79
Solubility in water	:	Complete
Other solubility(ies)	:	Soluble in all proportions in ethanol, benzene, other alcohols, chloroform, diethyl ether, other ethers, esters, ketones and most organic solvents.
Partition coefficient: n-octanol/water or Coefficient of water/oil distribution	:	log P (oct) = - 0.8
Auto-ignition temperature	:	464°C (867.2°F)
Decomposition temperature	:	N/Av
Viscosity	:	0.75 cSt @ 20C (68°F)
Volatiles (% by weight)	:	100%
Volatile organic Compounds (VOC's)	:	N/Av
Absolute pressure of container	:	N/Ap
Flame projection length	:	N/Ap
Other physical/chemical comments	:	Molecular Weight: 32.04 g/mol Molecular formula: C-H4-O

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Not normally reactive. Attacks some elastomers, rubber, plastic and coatings. Anhydrous methanol is non-corrosive to most metals at ambient temperatures except lead and magnesium. Coatings of copper (or copper alloys), zinc (including galvanized steel) or aluminium are attacked slowly.
Chemical stability	:	Stable under the recommended storage and handling conditions prescribed.
Possibility of hazardous reactions	:	Hazardous polymerization does not occur.
Conditions to avoid	:	Keep away from excessive heat, open flames, sparks and other possible sources of ignition. Avoid contact with incompatible materials. Do not use in areas without adequate ventilation.
Incompatible materials	:	Acids; Powdered metals; Alkali metals; Isocyanates; Strong oxidizers (e.g. Chlorine, Peroxides, etc.). .
Hazardous decomposition products	:	None known, refer to hazardous combustion products in Section 5.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:

Routes of entry inhalation	:	YES
Routes of entry skin & eye	:	YES
Routes of entry Ingestion	:	YES

SAFETY DATA SHEET

Routes of exposure skin absorption: YES

Potential Health Effects:

Signs and symptoms of short-term (acute) exposure

Sign and symptoms Inhalation : Toxic if inhaled. May cause irritation of the nose, throat, mucous membranes, and respiratory tract. Symptoms may include pain, headache, nausea, vomiting, dizziness, drowsiness and other central nervous system effects. Affected person could experience a latent period of no symptoms, followed by blurred vision and possibly blindness. Could also cause convulsions, coma, respiratory arrest and death.

Sign and symptoms ingestion : Toxic if swallowed. May cause irritation of mouth, throat, and stomach. Symptoms may include pain, headache, nausea, vomiting, dizziness, drowsiness and other central nervous system effects. May cause blindness if swallowed - cannot be made non-poisonous. Could also cause convulsions, coma, respiratory arrest and death.

Sign and symptoms skin : Toxic in contact with skin. May cause mild skin irritation. May be absorbed and cause symptoms similar to those for inhalation.

Sign and symptoms eyes : Causes serious eye irritation.

Potential Chronic Health Effects : Prolonged or repeated skin contact may cause drying and irritation. Prolonged or repeated overexposure could cause adverse liver effects.

Mutagenicity : Not expected to be mutagenic in humans.

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

Reproductive effects & Teratogenicity

: This material is classified as hazardous under OSHA regulations (29CFR 1910.1200) (Hazcom 2012). Classification:
Reproductive toxicity - Category 2. Suspected of damaging the unborn child.
Contains Methanol. Methanol may cause fetotoxic and teratogenic effects at doses which are not maternally toxic, based on animal data. May cause fetotoxic (toxic to the fetus during the latter stages of pregnancy, often through the placenta) and teratogenic effects (causing malformations of the fetus), based on animal information.

Sensitization to material : Not expected to be a skin or respiratory sensitizer.

Specific target organ effects : This material is classified as hazardous under OSHA regulations (29CFR 1910.1200) (Hazcom 2012). Classification:
Specific target organ toxicity - single exposure - Category 1. Causes damage to the optic nerve and central nervous system.

Other hazards which do not result in classification:
Prolonged or repeated overexposure could cause adverse liver effects.

Medical conditions aggravated by overexposure

: Pre-existing skin, eye, respiratory and central nervous system disorders.

Synergistic materials : Methanol can increase the toxicity of other liver toxins (e.g. Carbon tetrachloride).

Toxicological data : See below for toxicological data on the substance.

Chemical name	LC_{50}(4hr) inh, rat	LD_{50} (Oral, rat)	LD_{50} (Rabbit, dermal)
Methanol	> 5000 ppm/6H (4.1 mg/L/4H (vapour)	5628 mg/kg (rat) The estimated human lethal dose is: 300 - 1000 mg/kg	> 393 mg/kg (Monkey) 15 800 mg/kg (rabbit)

SAFETY DATA SHEET

Other important toxicological hazards

: CNS depression may result from extreme exposures. May cause blindness if swallowed.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity : The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters.

Ecotoxicity data:

Ingredients	CAS No	Toxicity to Fish		
		LC50 / 96h	NOEC / 21 day	M Factor
Methanol	67-56-1	15 400 mg/L (Bluegill sunfish)	446.7 mg/L/28-day (Fathead minnow) (QSAR)	None.

Ingredients	CAS No	Toxicity to Daphnia		
		EC50 / 48h	NOEC / 21 day	M Factor
Methanol	67-56-1	> 10 000 mg/L (Daphnia magna)	208 mg/L (QSAR)	None.

Ingredients	CAS No	Toxicity to Algae		
		EC50 / 96h or 72h	NOEC / 96h or 72h	M Factor
Methanol	67-56-1	22 000 mg/L/96hr (Green algae)	N/Av	None.

Persistence and degradability: Methanol is readily biodegradable.

Bioaccumulation potential : Does not accumulate in organisms.

Components	Partition coefficent n-octanol/ater (log Kow)	Bioconcentration factor (BCF)
Methanol (CAS 67-56-1)	- 0.82 to - 0.64	<10 species: fish

Mobility in soil : No data is available on the product itself.

Other Adverse Environmental effects

: No data is available on the product itself.

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SECTION 13. DISPOSAL CONSIDERATIONS

Handling for Disposal : See Section 7 (Handling and Storage) for further details. Empty containers retain residue (liquid and/or vapour) and can be dangerous. Do not cut, weld, drill or grind on or near this container.

.

Methods of Disposal : Dispose in accordance with all applicable federal, state, provincial and local regulations. Reuse or recycling should be given priority over disposal. Large volumes may be suitable for re-distillation or, if contaminated, incinerated. Can be disposed of in a sewage treatment facility.

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SAFETY DATA SHEET

RCRA : If this product, as supplied, becomes a waste in the United States, it may meet the criteria of a hazardous waste as defined under RCRA, Title 40 CFR 261. It is the responsibility of the waste generator to determine the proper waste identification and disposal method.

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SECTION 14 – TRANSPORTATION INFORMATION

TDG Classification:

#426- Consumer commodity

Special precautions for user : Keep away from heat, sparks and open flame. - No smoking. Appropriate advice on safety must accompany the package.

Environmental hazards : See Section 12 for more environmental information.

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

: This information is not available.

SECTION 15 - REGULATORY INFORMATION

US Federal Information:

Components listed below are present on the following U.S. Federal chemical lists:

Ingredients	CAS #	TSCA Inventory	CERCLA Reportable Quantity(RQ) (40 CFR 117.302):	SARA TITLE III: Sec. 302, Extremely Hazardous Substance, 40 CFR 355:	SARA TITLE III: Sec. 313, 40 CFR 372, Specific Toxic Chemical	
					Toxic Chemical	de minimus Concentration
Methanol	67-56-1	Yes	5000 lbs / 2270 kg	None.	Yes	1%

SAFETY DATA SHEET

SARA TITLE III: Sec. 311 and 312, MSDS Requirements, 40 CFR 370 Hazard Classes: Fire Hazard; Immediate (Acute) health hazard; Chronic Health Hazard. Under SARA Sections 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.

US State Right to Know Laws:

The following chemicals are specifically listed by individual States:

Ingredients	CAS #	California Proposition 65		State "Right to Know" Lists					
		Listed	Type of Toxicity	CA	MA	MN	NJ	PA	RI
Methanol	67-56-1	No	Developmental	Yes	Yes	Yes	Yes	Yes	Yes

Canadian Information:

WHMIS information: Refer to Section 2 for a WHMIS Classification for this product.

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

International Information:

Components listed below are present on the following International Inventory list:

Ingredients	CAS #	European EINECs	Australia AICS	Philippines PICCS	Japan ENCS	Korea KECI/KECL	China IECSC	NewZealand IOC
Methanol	67-56-1	200-659-6	Present	Present	(2)-201	KE-23193	Present	HSR001186

SECTION 16. OTHER INFORMATION

Legend **:** ACGIH: American Conference of Governmental Industrial Hygienists
CA: California
CAS: Chemical Abstract Services
CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR: Code of Federal Regulations
CNS: Central Nervous System
DOT: Department of Transportation
EmS: Emergency Schedules
EPA: Environmental Protection Agency
ERG: Emergency Response Guidebook
HMIS: Hazardous Materials Identification System
HSDB: Hazardous Substances Data Bank
IARC: International Agency for Research on Cancer

SAFETY DATA SHEET

Inh: Inhalation
LC: Lethal Concentration
LD: Lethal Dose
MA: Massachusetts
MN: Minnesota
MSHA: Mine Safety and Health Administration
N/Ap: Not Applicable
N/Av: Not Available
NFPA: National Fire Protection Association
NIOSH: National Institute of Occupational Safety and Health
NJ: New Jersey
NTP: National Toxicology Program
OSHA: Occupational Safety and Health Administration
PA: Pennsylvania
PEL: Permissible exposure limit
RCRA: Resource Conservation and Recovery Act
RI: Rhode Island
RTECS: Registry of Toxic Effects of Chemical Substances
SARA: Superfund Amendments and Reauthorization Act
STEL: Short Term Exposure Limit
TDG: Canadian Transportation of Dangerous Goods Act & Regulations
TLV: Threshold Limit Values
TSCA: Toxic Substance Control Act
TWA: Time Weighted Average
WHMIS: Workplace Hazardous Materials Identification System
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References : 1. ACGIH, Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices for 2012.
2. International Agency for Research on Cancer Monographs, searched 2012.
3. Canadian Centre for Occupational Health and Safety, CCInfoWeb databases, 2012 (Chempendium, HSDB and RTECs).
4. Material Safety Data Sheets from manufacturer.
5. US EPA Title III List of Lists - July 2011 version.
6. California Proposition 65 List - July 20, 2012 version.

Preparation Date (mm/dd/yyyy) : 07/21/2017

Other special considerations for handling : Provide adequate information, instruction and training for operators.

HMIS Rating : *- Chronic hazard 0 - Minimal 1 - Slight 2 - Moderate 3 - Serious 4 - Severe

Health:	*2	*Flammability:*	3	*Reactivity:*	0

NFPA Rating : 0 - Minimal 1 - Slight 2 - Moderate 3 - Serious 4 - Severe

Health:	1	*Flammability:*	3	*Instability:*	0	*Special Hazards:*	None

Prepared by: Kleen-Flo Tumbler Ind. Ltd.

Date de préparation de la FS (mm/jj/aaaa): 3/5/17

FICHES DE DONNÉES DE SÉCURITÉ

SECTION 1: IDENTIFICATION

Identificateur du produit utilisé sur l'étiquette

: **ANTIGEL POUR CONDUITS D'ESSENCE UNIVERSEL**

Code(s) du produit : 426

Usage recommandé du produit chimique et restrictions sur l'utilisation

: Antigel pour essence

Restrictions d'emploi recommandées:Aucun à notre connaissance. .

Famille chimique : Substance pure; Alcool aliphatique primaire saturé.

Nom, adresse, et numéro de telephone du fabricant:

Les Entreprises Kleen-Flo Tumbler Limitée
75 Advance Blvd.
Brampton, ON,
L6T 4N1
No. de téléphone du fournisseur

: 905-793-4311

No. de téléphone en cas d'urgence

: CANUTEC: 613-996-6666

DIRECTIVES POUR L'UTILISATION DU FDS: Le produit décrit dans cette FDS est un produit pour consommateurs. Il peut être utilisé comme décrit sur l'étiquette du produit, dans des conditions normales prévisibles, sans danger pour le consommateur. Cette FDS est conçue pour fournir des informations supplémentaires sur la sécurité et la manipulation du produit.

SECTION 2. IDENTIFICATION DES DANGERS

Classification du produit chimique

Liquide transparent incolore. Odeur d'alcool.

OSHA: Ce produit est classé comme dangereux en vertu des règlements américains de l'OSHA (29 CFR 1910.1200) (2012) Hazcom et du règlement SIMDUT canadien (Règlement sur les produits dangereux (SIMDUT) 2015).

Classification de risque :
Liquide inflammable - Catégorie 2
Toxicité aiguë - Oral(e) - Catégorie 3
Toxicité aiguë - Dermale - Catégorie 3
Toxicité aiguë - Inhalation - Catégorie 3
Irritation oculaire - Catégorie 2A
Toxicité pour la reproduction - Catégorie 2
Toxicité spécifique pour certains organes cibles - exposition unique - Catégorie 1

Éléments d'étiquetage

Pictogramme (s) de danger

Mot indicateur

DANGER!

Mentions de danger

Liquide et vapeurs très inflammables
Toxique par ingestion, par contact cutané ou par inhalation.
Provoque une sévère irritation des yeux.
Susceptible de nuire au foetus par inhalation.
Risque avéré d'effets graves pour les nerfs optiques en cas d'ingestion.

Conseils de prudence

Se procurer les instructions avant utilisation.
Ne pas manipuler avant d'avoir lu et compris toutes les précautions de sécurité.
Tenir à l'écart de chaleur/étincelles/flamme nue. - Ne pas fumer.
Maintenir le récipient fermé de manière étanche.
Mise à la terre/liaison équipotentielle du récipient et du matériel de réception.
Utiliser du matériel électrique et de ventilation antidéflagrant.
Ne pas utiliser d'outils produisant des étincelles.
Prendre des mesures de précaution contre les décharges électrostatiques.
Porter des gants de protection/vêtements de protection et un équipement de protection des yeux/du visage.
Se laver les mains et le visage soigneusement après manipulation.
Ne pas manger, boire ou fumer en manipulant ce produit.
Utiliser seulement en plein air ou dans un endroit bien ventilé.
Ne pas respirer les fumées, le brouillard ou les vapeurs.
En cas d'incendie: Utiliser eau pulvérisée, poudre chimique, CO2 ou mousse d'alcool pour l'extinction.
EN CAS DE CONTACT AVEC LA PEAU (ou les cheveux) : Enlever immédiatement les vêtements contaminés.
Rincer la peau à l'eau/se doucher.
Consulter un médecin en cas de malaise.
EN CAS D'INGESTION: appeler immédiatement un CENTRE ANTIPOISON ou un médecin.
Rincer la bouche.
EN CAS D'INHALATION: Transporter la victime en plein air et la maintenir au repos dans une position où elle peut confortablement respirer.
Appeler un CENTRE ANTIPOISON ou un médecin.
EN CAS DE CONTACT AVEC LES YEUX: rincer avec précaution à l'eau pendant plusieurs minutes. Enlever les lentilles de contact si la victime en porte et si elles peuvent être facilement enlevées. Continuer à rincer.
Si l'irritation oculaire persiste, consulter un médecin.
Stocker dans un endroit bien ventilé. Tenir au frais.
Garder sous clef.
Éliminer le contenu/récipient dans le lieu d'élimination conformément à la réglementation locale.

Autres dangers

Autres dangers qui ne nécessitent pas une classification:
Risque de causer une légère irritation de la peau. Risque d'être nocif en cas d'absorption par la peau. Peut être nocif par inhalation. La surexposition prolongée ou répétée a peux causer des effets défavorables du foie. La combustion produit des fumées nauséabondes et toxiques.

Précautions pour la protection de l'environnement: Éviter le rejet dans l'environnement.

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SECTION 3: COMPOSITION/INFORMATION SUR LES INGRÉDIENTS

Substance pure

Nom chimique	Nom commun et les synonymes	No CAS	Concentration (% en poids)
Méthanol	Carbinol Hydrate de méthyle Alcool méthylique	67-56-1	**80-100%**

SECTION 4. PREMIERS SOINS

Description des premiers soins

Ingestion **:** Appeler immédiatement un médecin ou un centre AntiPoison. Ne pas provoquer le vomissement. Rincer la bouche. Ne jamais rien faire avaler à une personne inconsciente.

Inhalation **:** En cas d'inhalation, déplacer la personne à l'air frais. Si la respiration est difficile, seul le personnel médical est autorisé à donner de l'oxygène. En cas d'arrêt respiratoire, donner la respiration artificielle. Si les symptômes persistent, consulter un médecin.

Contact avec la peau **:** Rincer immédiatement la peau avec de l'eau courante pendant au moins 15 minutes tout en retirant les vêtements contaminés. Si les symptômes persistent, consulter un médecin. Laver les vêtements contaminés avant une nouvelle utilisation.

Contact avec les yeux **:** Rincer immédiatement les yeux sous l'eau courante pendant au moins 20 minutes. S'il y a lieu, enlever les lentilles cornéennes si cela est facile à faire. Si les symptômes persistent, consulter un médecin.

Principaux symptômes et effets, aigus et différés

: Toxique en cas d'ingestion. Provoque une sévère irritation des yeux. Symptômes peuvent inclure rougeurs, douleur, larmoiement et conjonctivite. Susceptible de nuire au foetus. Peut causer des effets foetotoxiques (toxique pour le foetus pendant les derniers stades de la grossesse, souvent par le placenta) et des effets tératogènes (causant des malformations du fœtus), sur la base des informations animales. Risque avéré d'effets graves pour les nerfs optiques en cas d'ingestion.
Peut être nocif par inhalation. Risque d'être nocif en cas d'absorption par la peau. Risque de causer une légère irritation de la peau.
La surexposition prolongée ou répétée a peux causer des effets défavorables du foie.

Indication des éventuels soins médicaux immédiats et traitements particuliers nécessaires

: Traiter de façon symptomatique. Un examen médical immédiat est requis. Ce produit est un dépresseur du SNC.
Contient du méthanol. L'exposition aigue au methanol, que ce soit par l'ingstion ou l'inhalation d'une tres forte concentration de particules aeroportees, peut provoquer des symptomes apparaissant entre 40 minutes et 72 heures apres l'exposition. Surveillance médicale pendant 48 heures au moins. Les symptômes et les signes sont généralement limités au système nerveux central (SNC), aux yeux et au tractus gastro-intestinal. En raison des effets initiaux du CNS de maux de tête, vertiges, léthargie et confusion, il peut y avoir une impression d'intoxication à l'éthanol. Vision brouillée, diminution de l'acuité visuelle et de la photophobie sont des plaintes fréquentes. Le traitement par ipécac ou par lavage est indiqué chez tout patient qui se présente dans les deux heures suivant l'ingestion. Une acidose métabolique profonde se produit dans l'empoisonnement sévère et les niveaux sériques de bicarbonate sont une mesure plus précise de la sévérité que les niveaux sériques de methanol. Des protocoles de traitement sont disponibles dans la plupart des grands hôpitaux et une collaboration précoce avec des hôpitaux appropriés est recommandée.

L'administration d'éthanol peut réduire le métabolisme du méthanol, et par conséquent réduire les effets nocifs potentiels.

SECTION 5. MESURES À PRENDRE EN CAS D'INCENDIE

Agents extincteurs

Agents extincteurs appropriés

: Moyen d'extinction - pour les petits feux: Utiliser de l'eau pulvérisée ou une fine bruine, des mousses, du dioxyde de carbone ou un agent chimique en poudre.
Moyen d'extinction - pour les grands feux: AFFF (R) [Mousse aqueuse de moulage (résistant à l'alcool)] avec un système de dosage de mousse de 3% ou 6%; Eau pulvérisée (Voir la note dans Moyens d'extinction inappropriés).

Agents extincteurs inappropriés

: Ne pas utiliser un jet d'eau concentré, qui pourrait répandre le feu. L'eau pourrait ne pas être efficace puisqu'elle ne refroidira pas le produit à une température inférieure à son point d'éclair.
Mousses synthétiques ou mousses de protéines à usage général.

Dangers particuliers résultant de la substance ou du mélange / Conditions d'inflammabilité

: Liquide et vapeurs très inflammables. S'enflammera par la chaleur, les étincelles, les flammes ou toutes autres sources d'inflammation. Brûle avec une flamme pratiquement invisible. Les vapeurs sont plus lourdes que l'air et s'accumuleront dans les endroits fermés et plus bas. Les contenants fermés risquent d'éclater si exposé à une chaleur excessive ou aux flammes à cause de l'accumulation de la pression interne.

Classification d'inflammabilité (OSHA 29 CFR 1910.106)

: Liquide inflammable - Catégorie 2

Produits de combustion dangereux

: Oxydes de carbone; formaldéhyde; Autres composés organiques non identifiés.
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Équipement de protection spécial et précautions pour les pompiers

Équipement de protection pour les pompiers

: Les pompiers devraient porter un équipement de protection approprié et un appareil respiratoire autonome muni d'un élément facial complet à pression positive.

Méthodes spéciales de lutte contre l'incendie

: Combattre les incendies à partir d'une distance sécuritaire. Déplacer les contenants des lieux d'incendie s'il n'y a pas de danger. L'eau pulvérisée peut être utile pour refroidir l'équipement exposé à la chaleur et aux flammes.

SECTION 6. MESURES À PRENDRE EN CAS DE DÉVERSEMENT ACCIDENTEL

Précautions individuelles, équipement de protection et procédures d'urgence

: Restreindre l'accès aux lieux jusqu`à ce que le nettoyage soit terminé. S'assurer que le nettoyage est effectué par un personnel qualifié. Toutes les personnes mises en cause lors du nettoyage doivent porter un équipement de protection approprié.
Équipement de protection individuel: voir section 8.

Précautions pour la protection de l'environnement

: S'assurer que le produit déversé s'infiltre dans les drains, les égouts, les étendues d'eau ou les espaces fermés. Pour les gros déversements, endiguer le secteur afin de prévenir l'étalement.

Méthodes et matériel de confinement et de nettoyage

: Ventiler la zone. Utiliser uniquement des outils et de l'équipement antiétincelants durant le processus de nettoyage. Contenir et absorber le liquide déversé avec une matière inerte non combustible (ex: du sable), ensuite placer la matière contaminée dans un contenant pour élimination ultérieure (voir Section 13). La matière absorbante contaminée peut présenter les mêmes dangers que le produit déversé. Aviser les autorités compétentes tel qu'exigé. Ne pas utiliser d'absorbants combustibles comme la sciure.

Méthodes spéciales d'intervention antidéversement

: Si la quantité déversée dans l'environnement excède la quantité rapportable par EPA, il faut immédiatement communiquer avec le National Response Center aux Etats-Unis (Tél: 1-800-424-8802).
Quantité rapportable (RQ) US CERCLA: Méthanol (5000 lbs / 2270 kg)

SECTION 7. MANIPULATION ET STOCKAGE

Précautions relatives à la sûreté en matière de manutention

: Se procurer les instructions avant utilisation. Ne pas manipuler avant d'avoir lu et compris toutes les précautions de sécurité. Utiliser seulement dans des zones bien ventilées. Porter l'équipement de protection adéquat durant la manutention. Ne pas avaler ou ingérer. Éviter de respirer les vapeurs. Éviter le contact avec la peau, les yeux et les vêtements. Laver soigneusement après manipulation. Tenir à l'écart de chaleur/étincelles/flamme nue. - Ne pas fumer. Mise à la terre/liaison équipotentielle du récipient et du matériel de réception. Utiliser du matériel électrique et de ventilation antidéflagrant. Ne pas utiliser d'outils produisant des étincelles. Prendre des mesures de précaution contre les décharges électrostatiques. Éviter le contact avec les matières incompatibles. Garder les contenants hermétiquement fermés lorsqu'ils ne sont pas utilisés. Les contenants vides contiennent des résidus (liquide et/ou vapeur) et peuvent être dangereux. Ne pas utiliser la pression pour vider les fûts. Ne pas couper, souder, percer ou affûter sur le contenant ou près de celui-ci. Suivre les directives de l'étiquette même lorsque le contenant est vide. Utiliser un appareil de protection respiratoire autonome lors des opérations de sauvetage et d'entretien dans les cuves de stockage. Les reservoirs doivent etre mis a la terre et aeres et devraient etre munis de dispositifs de controle des emissions de vapeur. Les reservoirs doivent etre endigues. Le methanol anhydre est non-corrosif pour la plupart des metaus a la temperature ambiante, a l'exception du plomb et du magnesium. Cependant les enduits a base de cuivre (ou d'alliages de cuivre), de zinc (y compris l'acier galvanise) ou d'aluminium sont impropres a l'entreposage car ils sont attaques petit a petit. L'aicer doux est le materiau de construction recommande.

Conditions d'un stockage sûr

: Entreposer dans un endroit frais, sec et bien ventilé. Entreposer à l'écart des matières incompatibles. Garder sous clef. Les lieux d'entreposage doivent être identifiés clairement, libres de toute obstruction et accessibles au personnel qualifié et autorisé seulement. Inspecter régulièrement les contenants pour vérifier s'ils sont endommagés ou s'ils fuient. Interdiction de fumer dans le secteur. Les extincteurs adéquats ainsi que le matériel absorbant nécessaire aux déversements doivent être rangés prêt du secteur d'entreposage de ces produits. Équiper les réservoirs de vrac avec un dispositif de trop-plein comme des avertisseurs de haut niveau ou de confinement secondaire. Attaque certains élastomères, le caoutchouc, le plastique et les revêtements.

Substances incompatibles : Acides; Poudres métalliques; Métaux alcalins; Isocyanates; Oxydants forts (ex :Chlore, Peroxydes, etc..).

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SECTION 8. CONTRÔLE DE L'EXPOSITION/PROTECTION INDIVIDUELLE

Limites d'exposition:				
Nom chimique	**ACGIH TLV**		**OSHA PEL**	
	TWA	STEL	PEL	STEL
Méthanol	200 ppm (peau)	250 ppm (peau)	200 ppm (260	P/D mg/m³)

NIOSH IDLH (Concentrations Immédiatement Dangereuses pour la Vie et la Santé): 6000 ppm

Contrôles de l'exposition

Ventilation et mesures d'ingénierie

: Assurer une ventilation adéquate, surtout dans les endroits clos. Utiliser une ventilation générale ou à la source pour maintenir les concentrations dans l'air sous les limites d'exposition recommandées. Utiliser du matériel électrique et de ventilation antidéflagrant.

Protection respiratoire : Une protection respiratoire est exigée si les concentrations excèdent les limites TLV. Respirateurs homologués NIOSH sont recommandés.
Les appareils de protection respiratoire de type à cartouche ne sont pas recommandés.
Porter un appareil respiratoire autonome avec un masque complet fonctionnant en mode à pression positive.
Obtenir l'avis de votre fournisseur de protection respiratoire. Choisir les appareils respiratoires selon la forme et la concentration des contaminants dans l'air et conformément à OSHA (29 CFR 1910.134) ou CSA Z94.4-02.

Protection de la peau : Porter des gants imperméables comme le butylcaoutchouc.
Matière non-appropriée: Caoutchouc naturel; Néoprène; Caoutchouc nitrile; Polyéthylène; polyalcool de vinyle; Chlorure de polyvinyle.
Advice should be sought from glove suppliers. Utiliser des vêtements résistants comme une combinaison, un tablier et des bottes, s'il y a risque d'exposition au produit afin d'éviter tout contact.

Protection des yeux/du visage

: Des lunettes à coques antiéclaboussures sont recommandées. Un écran facial complet peut également être nécessaire.

Autre équipement de protection

: Un poste de douche oculaire et une douche d'urgence devront être à proximité du secteur de travail. D'autres équipments peuvent être exigés dépendant des normes du lieu de travail.

Considérations générales d'hygiène

: Éviter de respirer les vapeurs ou les buées. Éviter le contact avec la peau, les yeux et les vêtements. Ne pas manger, boire ou fumer en manipulant ce produit. Bien laver les mains après la manipulation du produit avant de manger, de boire, de fumer ou d'utiliser les toilettes. Enlever les vêtements souillés et bien les laver avant de les porter à nouveau. À manipuler conformément aux bonnes pratiques d'hygiène industrielle et aux consignes de sécurité.

SECTION 9. PROPRIÉTÉS PHYSIQUES ET CHIMIQUES

Apparence : Liquide transparent incolore.

Odeur : Alcool

FICHES DE DONNÉES DE SÉCURITÉ

Seuil olfactif : 50-100 ppm
pH : P/D
Point de fusion/point de congelation : - 97.8°C (- 144°F)
Point initial d'ébullition et domaine d'ébullition: 64.5°C (148°F)
Point d'éclair : 12°C (53.6°F)
Point d'éclair, méthode : coupelle fermée
Taux d'évaporation (acétate n-butylique = 1) : <1
inflammabilité (solide, gaz) : Non applicable.
Limite inférieure d'inflammabilité (% en vol.) : 7.3%

Limite supérieure d'inflammabilité (% en vol.) : 36%

Propriétés comburantes : Aucun(e).

Propriétés explosives : N'est pas sensé être sensible aux impacts. Risque d'être sensible aux décharges électrostatiques. Les vapeurs de la catégorie inflammable peuvent être allumées par une décharge d'électricité statique assez forte.
Tension de vapeur : 92 mmHg @ 20°C
Densité de vapeur : >1.1

Densité relative / Poids spécifique : 0.79

Solubilité dans l'eau : Complet
Autres solubilité(s) : Soluble en toutes proportions dans l'éthanol, le benzène, d'autres alcools, le chloroforme, l'éther de diéthyle, d'autres éthers, les esters, les cétones et la plupart des solvants organiques.
Coefficient de partage: n-octanol/eau / Coefficient de répartition eau/huile
: log P (oct) = - 0.8
Température d'auto-inflammation : 464°C (867.2°F)
Température de décomposition:
P/D

Viscosité : 0.75 cSt @ 20C (68°F)
Matières volatiles (% en poids) :
100%
Composés organiques volatils (COV)
: P/D
Pression absolue du récipient
: S/O
Distance de projection de la flamme
: S/O
Autres observations physiques/chimiques
: Poids moléculaire: 32.04 g/mol Formule moléculaire C-H4-O

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Date de préparation de la FS (mm/jj/aaaa): 3/5/17

FICHES DE DONNÉES DE SÉCURITÉ

SECTION 10. STABILITÉ ET RÉACTIVITÉ

Réactivité : N'est normalement pas réactif.
Attaque certains élastomères, le caoutchouc, le plastique et les revêtements.
Le méthanol anhydre est non corrosif pour la plupart des métaux à température ambiante, sauf le plomb et le magnésium. Les revêtements de cuivre (ou d'alliages de cuivre), de zinc (y compris l'acier galvanisé) ou d'aluminium sont attaqués lentement.

Stabilité chimique : Stable dans les conditions recommandées et prescrites de manutention et d'entreposage.

Risque de réactions dangereuses
: Une polymérisation dangereuse ne se produit pas.

Conditions à éviter : Tenir à l'écart d'une chaleur excessive, des flammes nues, des étincelles ou autres sources possibles d'inflammation. Éviter le contact avec les matières incompatibles. Ne pas utiliser dans des zones sans ventilation adéquate.

Matériaux incompatibles : Acides; Poudres métalliques; Métaux alcalins; Isocyanates; Oxydants forts (ex :Chlore, Peroxydes, etc..).

Produits de décomposition dangereux
: Aucun connu, se référer aux produits de combustion dangereux à la Section 5.

SECTION 11. DONNÉES TOXICOLOGIQUES

Information sur les voies d'exposition probables:

Voies d'entrée - inhalation : OUI

Voies d'entrée - peau et yeux : OUI

Voies d'entrée - ingestion : OUI

Voies d'exposition - absorption cutanée : OUI

EFFETS ÉVENTUELS POUR LA SANTÉ:

Symptômes d'exposition de courte durée (aiguë)

Signes et symptômes - Inhalation

: Toxique par inhalation. Risque de causer une irritation du nez, de la gorge, des muqueuses et de la voie respiratoire. Les symptômes peuvent inclure douleur, maux de tête, nausée, vomissement, somnolence, étourdissements et autres effets sur le système nerveux central. La personne affectée peut pendant une certaine période ne ressentir aucun symptôme, pour ensuite avoir une vision floue et possiblement une cécité. Peut également causer des convulsions, le coma, un arrêt respiratoire et le décès.

Signes et symptômes - ingestion

: Toxique en cas d'ingestion. Risque de causer une irritation de la bouche, de la gorge et de l'estomac. Les symptômes peuvent inclure douleur, maux de tête, nausée, vomissement, somnolence, étourdissements et autres effets sur le système nerveux central. Risque de causer la cécité, à l'ingestion - ne peut pas être rendu non-toxique. Peut également causer des convulsions, le coma, un arrêt respiratoire et le décès.

Signes et symptômes - peau : Toxique par contact avec la peau. Risque de causer une légère irritation de la peau. Risque d'être absorbé et de causer des symptômes semblables à ceux pour l'inhalation.

Signes et symptômes - yeux : Provoque une sévère irritation des yeux.

Risque d'effets chroniques sur la santé
: Le contact continu ou à répétition avec la peau risque de causer l'assèchement et l'irritation de la peau. La surexposition prolongée ou répétée a peux causer des effets défavorables du foie.

Mutagénicité : N'est pas sensé être mutagène chez les humains.

Cancérogénicité : Aucun des composants sont inscrits comme étant cancérogènes par ACGIH, IARC, OSHA ou NTP.

Effets sur la reproduction & Tératogénicité

: Cette matière est considérée dangereuses en vertu des règlements de l'OSHA (29CFR 1910.1200) (Hazcom 2012). Classification:
Toxicité pour la reproduction - Catégorie 2. Susceptible de nuire au foetus.
Contient du méthanol. Le méthanol peut entraîner des effets fœtotoxiques et tératogènes à des doses qui ne sont pas toxiques pour la mère, basé sur des données animales. Peut causer des effets foetotoxiques (toxique pour le foetus pendant les derniers stades de la grossesse, souvent par le placenta) et des effets tératogènes (causant des malformations du fœtus), sur la base des informations animales.

Sensibilisation à la matière : N'est pas sensé être un sensibilisateur respiratoire ou cutané.

Effets spécifiques sur organes cibles

: Cette matière est considérée dangereuses en vertu des règlements de l'OSHA (29CFR 1910.1200) (Hazcom 2012). Classification:
Toxicité spécifique pour certains organes cibles - exposition unique - Catégorie 1.
Risque avéré d'effets graves pour les nerfs optiques en cas d'ingestion.

Autres dangers qui ne nécessitent pas une classification:
La surexposition prolongée ou répétée a peux causer des effets défavorables du foie.

Maladies aggravées par une surexposition

: L'exposition à ce produit peut aggraver des maladies pulmonaires, oculaires, cutanées ou du système nerveux central déjà existantes.

Substances synergiques : Le méthanol peut augmenter la toxicité d'autres toxines du foie (par exemple le tétrachlorure de carbone).

Données toxicologiques : Voir les données toxicologiques de cette substance ci-dessous.

Nom chimique	CL50(4hr) inh, rat	DL50 (Oral, rat)	DL50 (cutané, lapin)
Méthanol	> 5000 ppm/6H (4.1 mg/L/4H (vapeur)	5628 mg/kg (rat) La dose létale pour l'humain est estimé à: 300 - 1000 mg/kg	> 393 mg/kg (Singe) 15 800 mg/kg (lapin)

Autres dangers toxicologiques importants

: La dépresssion du SNC risque de se produire suivant des expositions à l'extrême. Peut provoquer la cécité en cas d'ingestion.

SECTION 12. DONNÉES ÉCOLOGIQUES

Écotoxicité : Le produit ne doit pas s'infiltrer dans les drains ou les cours d'eau, ou être déposé là où cela pourrait affecter les eaux de surface ou souterraines.

Données Écotoxicité:

Composants	No CAS	Toxicité pour les poissons		
		CL50 / 96h	NOEL / 21 jour	Facteur M
Méthanol	67-56-1	15 400 mg/L (Crapet arlequin)	446.7 mg/L/28 jours (Vairon à grosse tête) (QSAR)	Aucun(e).

Composants	No CAS	Toxicité pour les daphnias		
		CE50 / 48h	NOEL / 21 jours	Facteur M
Méthanol	67-56-1	> 10 000 mg/L (daphnie magna)	208 mg/L (QSAR)	Aucun(e).

Composants	No CAS	Toxicité pour les algues		
		EC50 / 96h or 72h	NOEC / 96h or 72h	Facteur M
Méthanol	67-56-1	22 000 mg/L/96hr (algues vertes)	P/D	Aucun(e).

Persistance et dégradabilité

: Le méthanol est facilement biodégradable.

Potentiel de bioaccumulation

: Ne s'accumule pas dans les organismes.

Composants	Coefficient de partage: n-octanol/eau (log Kow)	Facteur de bioconcentration (FBC)
Méthanol (CAS 67-56-1)	- 0,82 à - 0,64	<10 species: fish

Mobilité dans le sol **:** Il n'existe pas d'information disponible pour le produit lui même.

Effets nocifs divers sur l'environnement

: Il n'existe pas d'information disponible pour le produit lui même.

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SECTION 13. DONNÉES SUR L'ÉLIMINATION

Manipulation en vue de l'élimination

: Voir Section 7 (Manutention et entreposage) pour plus de détails. Les contenants vides contiennent des résidus (liquide et/ou vapeur) et peuvent être dangereux. Ne pas couper, souder, percer ou affûter sur le contenant ou près de celui-ci.

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Méthodes d'élimination **:** Les contenants doivent être éliminés conformément à tous les règlements fédéraux, provinciaux et locaux applicables. Communiquer avec les agences locales, fédérales, provinciales pour connaître la réglementation spécifique. La réutilisation ou le recyclage devrait être priorisé par rapport à l'élimination. Des volumes importants peuvent être appropriés pour une nouvelle distillation ou, s'ils sont contaminés, ou incinérés. Peut être éliminé dans une installation de traitement des eaux usées.

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RCRA (Resource Conservation and Recovery Act/Loi sur la conservation et la remise en état des ressources)

: Si ce produit, tel que fourni, devient un déchet aux Etats-Unis, il pourrait respecter les critères de classification d'un déchet dangereux tel que défini par RCRA, Title 40 CFR 261. Le générateur des déchets a la responsabilité de déterminer l'identification adéquate du déchet et de la méthode d'élimination.

FICHES DE DONNÉES DE SÉCURITÉ

SECTION 14. INFORMATIONS RELATIVES AU TRANSPORT

Information sur la réglementation

Canada (TMD)

#426- Bien de consommation

Précautions particulières à prendre par l'utilisateur

: Tenir à l'écart de chaleur/étincelles/flamme nue. - Ne pas fumer. Des conseils de prudence adéquats doivent accompagner l'emballage.

Dangers pour l'environnement

: Consulter Section 12 pour plus de renseignements environnementaux.

Transport en vrac conformément à l'annexe II de la convention Marpol 73/78 et au recueil IBC

: Ces informations ne sont pas disponibles.

SECTION 15. INFORMATION SUR LA RÉGLEMENTATION

Renseignement fédéral É.-U :

Les composants inscrits ci-dessous sont présents sur les listes de produits chimiques fédérales américaines suivantes

Composants	No CAS	TSCA Inventory	CERCLA Reportable Quantity(RQ) (40 CFR 117.302):	SARA TITLE III: Sec. 302, Extremely Hazardous Substance, 40 CFR 355:	SARA TITLE III: Sec. 313, 40 CFR 372, Specific Toxic Chemical	
					Toxic chimique	concentration de minimis
Méthanol	67-56-1	Oui	5000 lbs / 2270 kg	Aucun.	Oui	No

SARA TITLE III: Sec. 311 et, 312, Exigences Fiches signalétiques, 40 CFR 370 Hazard Classes: Risque d'incendie; Danger immédiat (aigu) pour la santé; Danger chronique pour la santé. Selon SARA Sections 311 et 312 , EPA a établi la quantité critique pour le rapport de produits chimiques dangereux. La quantité critique actuellement est de 500 livres pour « Threshold Planning Quantity (TPQ) », lequel sera le moins élevé, pour les substances « extremely hazardous) et de 10 000 livres pour tous les autres produits chimiques dangereux.

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Lois É.-U. "State Right to Know":

Les produits chimiques suivants sont inscrits par chacun de ces états:

Composants	No CAS	California Proposition 65		Liste d'état "Right to Know"					
		Inscrit	Type de toxicité	CA	MA	MN	NJ	PA	RI
Méthanol	67-56-1	Non	Développementale	Oui	Oui	Oui	Oui	Oui	Oui

Canadian Information:

Renseignements SIMDUT: Se référer à la Section 2 pour la classification SIMDUT de ce produit.

Renseignements Loi canadienne sur la protection de l'environnement (CEPA): Tous les ingrédients énumérés apparaissent sur la Liste intérieure des substances (DSL).

Renseignement international:

Les composants inscrits ci-dessous sont présents sur la liste d'inventaire internationale suivante:

Composants	No CAS	European EINECs	Australia AICS	Philippines PICCS	Japan ENCS	Korea KECI/KECL	China IECSC	NewZealand IOC
Méthanol	67-56-1	200-659-6	Present	Présent	(2)-201	KE-23193	Present	HSR001186

SECTION 16. AUTRES INFORMATIONS

Légende : ACGIH: American Conference of Governmental Industrial Hygienists
CA: California
CAS: Chemical Abstract Services
CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR: Code of Federal Regulations
SNC: Système nerveux central
DOT: Department of Transportation
EmS: Intervention d'urgence
EPA: Environmental Protection Agency
GMU: Guide des mesures d'urgence
HMIS (Hazardous Materials Information System/Système d'information sur les matières dangereuses)
HSDB: Hazardous Substances Data Bank

CIRC: Centre international de recherche sur le cancer
Inh: Inhalation
CL: Concentration létale
DL: Dose létale
MA: Massachusetts
MN: Minnesota
MSHA: Mine Safety and Health Administration
S/O: Sans objet
P/D: Pas disponible
NFPA: National Fire Protection Association
NIOSH: National Institute of Occupational Safety and Health
NJ: New Jersey
NTP: National Toxicology Program / Programme national de toxicologie
OSHA: Occupational Safety and Health Administration
PA: Pennsylvania
PEL: Permissible exposure limit (Limite d'exposition permise)
RCRA: Resource Conservation and Recovery Act
RI: Rhode Island
RTECS: Registry of Toxic Effects of Chemical Substances
SARA: Superfund Amendments & Reauthorization Act
STEL: Limite d'exposition à court terme (Short Term Exposure Limit)
TMD: Loi et Règlement sur le transport des marchandises dangereuses au Canada
TLV: Valeurs seuils (Threshold Limit Values)
TSCA: Toxic Substance Control Act
TWA: Moyenne pondérée dans le temps
SIMDUT: Système d'information sur les matières utilisées au travail
.

Références **:**

1. ACGIH, Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices for 2012.
2. International Agency for Research on Cancer Monographs, searched 2012.
3. Canadian Centre for Occupational Health and Safety, CCInfoWeb databases, 2012 (Chempendium, HSDB and RTECs).
4. Material Safety Data Sheets from manufacturer.
5. US EPA Title III List of Lists - July 2011 version.
6. California Proposition 65 List - July 20, 2012 version.

Date de la préparation (mm/jj/aaaa)

: 3/5/17

Autres considérations spéciales pour une manipulation

: Mise à disposition d'informations, d'instructions et de mesures de formation appropriées à l'intention des opérateurs.

Classification SIMD ***** - Risque chronique 0- Aucun risque 1- Mineur 2- Modéré 3- Grave 4- Menace pour la vie

Santé ***** 2 Inflammabilité 3 *Reactivity:* 0

Évaluation NFPA **:**

0- Aucun risque 1- Mineur 2- Modéré 3- Grave 4- Menace pour la vie

Santé *:* 1 Inflammabilité *:* 3 *Instabilité:* 0 *Autres dangers: aucun.*

PETRO-CANADA

Material Safety Data Sheet

NFPA	HMIS (U.S.A.)	Rating	Protective Clothing	DOT (pictograms)
	Health Hazard 2* Fire Hazard 4 Reactivity 0 Personal Protection H	0 Insignificant 1 Slight 2 Moderate 3 High 4 Extreme		

Section I. Chemical Product and Company Identification

Product Name	**GASOLINE, UNLEADED**	**Code**	W102E
Synonym	Regular, Unleaded Gasoline (US Grade), Mid-Grade, Plus, Super, WinterGas, SummerGas, Supreme, SuperClean WinterGas, RegularClean, PlusClean, Premium, marked or dyed gasoline, Super Premium (94 RO)	**DSL**	Ingredient(s) are listed.
		TSCA	Ingredient(s) are listed.
Manufacturer	PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3	**In case of Emergency**	Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).
Material Uses	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.		

Section II. Composition and Information on Ingredients

			Exposure Limits (ACGIH)		
Name	**CAS #**	**% (V/V)**	**TLV-TWA(8 h)**	**STEL**	**CEILING**
1) Gasoline	8006-61-9	85-100	300 ppm (890 mg/m³)	500 ppm (1480 mg/m³)	Not established
2) Methyl tert-butly ether	1634-04-4	0-15	40 ppm (144mg/m³)	Not established	Not established

Manufacturer Recommendation	Not applicable
Other Exposure Limits	Consult local, state, provincial or territory authorities for acceptable exposure limits.

Section III. Hazards Identification.

Potential Health Effects	Possible cancer hazard. Inhalation of vapours can be irritating to respiratory tract and cause CNS depression with symptoms of nausea, headaches, vomiting, dizziness, fatigue, light-headedness, reduced coordination, unconciousness and possibly death. Skin and eye contact can cause irritation. Toxic if ingested. For more information, refer to Section 11.

Section IV. First Aid Measures

Eye Contact	IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek medical attention.
Skin Contact	Remove contaminated clothing - launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Seek medical attention.
Inhalation	Evacuate the victim to a safe area as soon as possible. If the victim is not breathing, perform artificial respiration. Allow the victim to rest in a well ventilated area. Seek medical attention.
Ingestion	DO NOT induce vomiting because of danger of aspirating liquid into lungs. Seek medical attention.
Note to Physician	Not available

Section V. Fire-fighting Measures

Flammability	Flammable liquid (NFPA).	**Flammable Limits**	Lower: 1.3%; Upper: 7.6% (NFPA).
Flash Points	Closed Cup: -50 to -38°C (-58 to -36°F), ASTM D56 Standard Test Method for Flash Point by Tag Closed Tester.	**Auto-Ignition Temperature**	257°C (495°F) (NFPA).
Fire Hazards in Presence of Various Substances	Extremely flammable in presence of open flames, sparks, 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.	**Explosion Hazards in Presence of Various Substances**	Do not cut, weld, heat, drill or pressurize empty container. Containers may explode in heat of fire. Vapours may form explosive mixtures with air.
Products of Combustion	Carbon oxides (CO, CO2), nitrogen oxides (NOx), polynuclear aromatic hydrocarbons, phenols, smoke and irritating vapours as products of incomplete combustion.		

Continued on Next Page

Available in French

Fire Fighting Media and Instructions	NAERG96, GUIDE 128, flammable/combustible liquid (non-polar/water-immiscible). CAUTION: This product has a very low flash point, use of water spray when fighting fire may be inefficient. SMALL FIRE: Use DRY chemicals, CO2, water spray or foam. LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet. If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions. DO NOT extinguish a leaking gas flame unless leak can be stopped. Shut off fuel to fire if it is possible to do so without hazard. If this is impossible, withdraw from area and let fire burn out under controlled conditions. Withdraw immediately in case of rising sound from venting safety device or any discolouration of tank due to fire. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. Avoid flushing spilled material into sewers, streams or other bodies of water. Self-contained breathing apparatus (SCBA) will be required if approaching the fire from downwind, or to enter enclosed areas or buildings.

Section VI. Accidental Release Measures

Material Release or Spill	NAERG96, GUIDE 128, flammable/combustible liquid (non-polar/water-immiscible). Evacuate in a downwind direction for at least 300 meters (1000 feet). ELIMINATE ALL IGNITION SOURCES. Ventilate closed spaces before entering. By forced ventilation, maintain concentration of vapour below the range of explosive mixture. Avoid contact, fully-encapsulating, vapour-protective clothing should be worn for spills and leaks with no fire. Stop leak if without risk. Use vapour suppressing foam or water spray to reduce vapours; it may reduce vapour, but it may not prevent ignition in closed spaces; isolate area until vapour has dispersed. Contain spill. Absorb with inert absorbents such as dry clay, or diatomaceous earth, or recover using electrically grounded explosion-proof pumps. Avoid inhaling dust of diatomaceous earth for it may contain silica (very fine particle size), making this a potential respiratory hazard. Place used absorbent in closed metal containers for later disposal or burn absorbent in a suitable combustion chamber. DO NOT FLUSH TO SEWERS, STREAMS OR OTHER BODIES OF WATER. Check with applicable jurisdiction for specific disposal requirements of spilled material and empty containers. Notify the appropriate authorities immediately.

Section VII. Handling and Storage

Handling	Keep away from heat, spark and other sources of ignition. Empty container may contain flammable/explosive residues or vapours. DO NOT reuse empty containers without commercial cleaning or reconditioning. Ground/bond line and equipment during pumping or transfer to avoid accumulation of static charge. DO NOT USE AS CLEANING FLUID OR SIPHON BY MOUTH. Wear proper protective equipment. Avoid inhalation and contact with skin or eyes. Practice good personal hygiene. Wash hands after handling and before eating. Launder work clothes frequently. Discard saturated leather goods.
Storage	Store in cool, dry, isolated, well-ventilated area, and away from direct sunlight, sources of ignition and incompatibles. Flammable materials should be stored in a separate safety storage cabinet or room. Ground all equipment containing material.

Section VIII. Exposure Controls/Personal Protection

Engineering Controls	For normal application, special ventilation is not necessary. If user's operations generate vapours or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Make-up air should always be supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection - ***The selection of personal protective equipment varies, depending upon conditions of use.***	
Eyes	Eye protection (i.e., safety glasses, safety goggles and/or face shield) should be determined based on conditions of use. If product is used in an application where splashing may occur, the use of safety goggles and/or a face shield should be considered.
Body	Wear appropriate clothing to prevent skin contact. As a minimum long sleeves and trousers should be worn.
Respiratory	Where concentrations in air may exceed the occupational exposure limits given in Section 2 (and those applicable to your area) and where engineering, work practices or other means of exposure reduction are not adequate, NIOSH approved respirators may be necessary to prevent overexposure by inhalation.
Hands	Wear appropriate chemically protective gloves. When handling hot product ensure gloves are heat resistant and insulated.
Feet	Wear appropriate footwear to prevent product from coming in contact with feet and skin.

Section IX. Physical and Chemical Properties

Physical State and Appearance	Clear liquid.	**Viscosity**	0.6 cSt.
Colour	Clear to slightly yellow, undyed liquid. May be dyed red for taxation purposes.	**Pour Point**	Not applicable.
Odour	Gasoline. MTBE has a terpene-like odour.	**Softening Point**	Not applicable.
Odour Threshold	Less than 1 ppm.	**Dropping Point**	Not applicable.
Boiling Point	25 to 220°C (77 to 428°F) Initial boiling point by ASTM D86 Standard Test Method.	**Penetration**	Not applicable.
Density	0.7 kg/L @ 15ºC (59ºF).	**Oil / Water Dist. Coeff.**	Not available
Vapour Density	3 to 4 (Air = 1) (NFPA).	**Ionicity (in water)**	Insoluble in water.
Vapour Pressure	107 kPa @ 37.8ºC (100ºF)	**Dispersion Properties**	Not available
Volatility	Volatile.	**Solubility**	Hydrocarbon components virtually insoluble in water. Soluble in alcohol, ether, chloroform, and benzene. Dissolves fats, oils and natural resins.

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Section X. Stability and Reactivity

Corrosivity	Non corrosive.		
Stability	The product is stable under normal handling and storage conditions.	**Hazardous Polymerization**	Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Reactive with oxidizing agents, acids.	**Decomposition Products**	May release COx, NOx, phenols, polynuclear aromatic hydrocarbons, smoke and irritating vapours when heated to decomposition.

Section XI. Toxicological Information

Routes of Entry	Skin contact, eye contact, inhalation, and ingestion.
Acute Lethality	Gasoline: Acute oral toxicity (LD50): 13 600 mg/kg (rat). Acute dermal toxicity (LD50): >5000 mg/kg (rabbit). Acute inhalation toxicity (LC50): >300 000 mg/m³/4h (rat). MTBE: Acute oral toxicity (LD50): 29630 mg/kg (rat). Acute dermal toxicity (LD50): >6800 mg/kg (rabbit). Acute inhalation toxicity (LC50): 23 576 ppm/4h (rat).
Chronic or Other Toxic Effects	
Dermal Route:	This product can cause skin irritation. Prolonged or repeated contact with skin may cause dermatitis.
Inhalation Route:	Inhalation of vapours can be irritating to repiratory tract and cause CNS depression with symptoms of nausea, headaches, vomiting, dizziness, fatigue, light-headedness, reduced coordination, unconciousness and possibly death.
Oral Route:	Swallowing or vomiting of the liquid may result in aspiration into the lungs. Can cause CNS depression. (See Inhalation Route for symptoms).
Eye Irritation/Inflammation:	Can cause irritation to the eyes.
Immunotoxicity:	Not available
Skin Sensitization:	This product is not expected to be a skin sensitizer, based on the available data and the known hazards of the components.
Respiratory Tract Sensitization:	This product is not expected to be a respiratory tract sensitizer, based on the available data and the known hazards of the components.
Mutagenic:	This product is not considered to be a mutagen, based on the available data and the known hazards of the components.
Reproductive Toxicity:	This product is not considered to be a reproductive hazard, based on the available data and the known hazards of the components.
Teratogenicity/Embryotoxicity:	This product is not considered to be a teratogen or an embryotoxin, based on the available data and the known hazards of the components.
Carcinogenicity (ACGIH):	ACGIH A3: animal carcinogen. [Gasoline, MTBE]
Carcinogenicity (IARC):	IARC Group 2B: possibly carcinogenic to humans. [Gasoline]
Carcinogenicity (NTP):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by NTP.
Carcinogenicity (IRIS):	Not available
Carcinogenicity (OSHA):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by OSHA.
Other Considerations	Unleaded gasoline caused kidney effects in male rats and liver effects in female mice.

Section XII. Ecological Information

Environmental Fate	Not available	**Persistance/ Bioaccumulation Potential**	Not available
BOD5 and COD	Not available	**Products of Biodegradation**	Not available
Additional Remarks	Not available		

Section XIII. Disposal Considerations

Waste Disposal	Preferred waste management priorities are: (1) recycle or reprocess; (2) incineration with energy recovery; (3) disposal at licensed waste disposal facility. Ensure that disposal or reprocessing is in compliance with government requirements and local disposal regulations. Consult your local or regional authorities.

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Section XIV. Transport Information

DOT Classification	**Special Provisions for Transport**

Section XV. Regulatory Information

Other Regulations	CEPA: This product is acceptable for use under the provisions of WHMIS-CPR. All components of this formulation are listed on the CEPA-DSL (Domestic Substances List). EPA: All components of this formulation are listed on the US EPA-TSCA Inventory. This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR. Please contact Product Safety for more information.		
DSD/DPD (EEC)	Not evaluated.	**WHMIS (Canada)**	B-2, D-2A, D-2B
ADR (Europe) (Pictograms)	**NOT EVALUATED FOR EUROPEAN TRANSPORT** **NON ÉVALUÉ POUR LE TRANSPORT EUROPÉEN.**	**TDG (Canada) (Pictograms)**	

Section XVI. Other Information

References Available upon request.
* Marque de commerce de Petro-Canada - Trademark

Glossary

ACGIH - American Conference of Governmental Industrial Hygienists
ADR - Agreement on Dangerous goods by Road (Europe)
ASTM - American Society for Testing and Materials (
BOD5 - Biological Oxygen Demand in 5 days
CAN/CGA B149.2 Propane Installation Code
CAS - Chemical Abstract Services
CEPA - Canadian Environmental Protection Act
CERCLA - Comprehensive Environmental Response, Compensation and Liability Act
CFR - Code of Federal Regulations
CHIP - Chemicals Hazard Information and Packaging Approved Supply List
COD5 - Chemical Oxygen Demand in 5 days
CPR - Controlled Products Regulations
DOT - Department of Transport
DSCL - Dangerous Substances Classification and Labeling (Europe)
DSD/DPD - Dangerous Substances or Dangerous Preparations Directives (Europe)
DSL - Domestic Substance List
EEC/EU - European Economic Community/European Union
EINECS - European Inventory of Existing Commercial Chemical Substances
EPCRA - Emergency Planning and Community Right to Know Act
FDA - Food and Drug Administration
FIFRA - Federal Insecticide, Fungicide and Rodenticide Act
HCS - Hazardous Communication System
HMIS - Hazardous Material Information System
IARC - International Agency for Research on Cancer
IRIS - Integrated Risk Information System
LD50/LC50 - Lethal Dose/Concentration kill 50%
LDLo/LCLo - Lowest Published Lethal Dose/Concentration
NAERG'96 - North American Emergency Response Guide Book (1996)
NFPA - National Fire Prevention Association
NIOSH - National Institute for Occupational Safety & Health
NPRI - National Pollutant Release Inventory
NSNR - New Substances Notification Regulations (Canada)
NTP - National Toxicology Program
OSHA - Occupational Safety & Health Administration
PEL - Permissible Exposure Limit
RCRA - Resource Conservation and Recovery Act
SARA - Superfund Amendments and Reorganization Act
SD - Single Dose
STEL - Short Term Exposure Limit (15 minutes)
TDG - Transportation Dangerous Goods (Canada)
TDLo/TCLo - Lowest Published Toxic Dose/Concentration
TLm - Median Tolerance Limit
TLV-TWA - Threshold Limit Value-Time Weighted Average
TSCA - Toxic Substances Control Act
USEPA - United States Environmental Protection Agency
USP - United States Pharmacopoeia
WHMIS - Workplace Hazardous Material Information System

For Copy of MSDS
Fuels & Solvents:
Western Canada, telephone: 403-296-4158; fax: 403-296-6551
Ontario & Central Canada, telephone: 1-800-668-0220; fax: 1-800-837-1228
Quebec & Eastern Canada, telephone: 514-640-8308; fax: 514-640-8385

For Product Safety Information: (905) 804-4752

Prepared by Product Safety - TAR on 6/20/2001.

Data entry by Product Safety - TAR.

Antifreeze/Coolant

SECTION 1. IDENTIFICATION

Product Identifier	Antifreeze/Coolant
Other Means of Identification	16-242, 16-244, 16-244LAU, 16-245, 16-284, 16-284GD, 16-285, 26-248, 26-248-1000, 26-248LAU, 26-248PC, 26-249HD-1000, 26-289, 26-289-1000, 26-289PC, 26-378RLAU-1000, 26-769-1000, 26-769GR-1000, 26-929RLAU, 35-249FS, 35-759E, 36-241SO, 36-241U/N, 36-244APREXP, 36-244AX, 36-244AXEXP, 36-244C, 36-244CHR, 36-244CQ, 36-244E, 36-244FEDEXP, 36-244FS, 36-244PC, 36-244PM, 36-244PMEXP, 36-244PPEXP, 36-244PROFEXP, 36-244RAD, 36-244SH, 36-244SO, 36-244SP, 36-244SPROEXP, 36-244STP, 36-244STPEXP, 36-244TH, 36-244TOT, 36-244U/N, 36-244UFA, 36-244UG, 36-244WM, 36-244WM-S, 36-245UFA, 36-249AXEXP, 36-249CHR, 36-249E, 36-249GBW, 36-249SPROEXP, 36-249U/N, 36-254SO, 36-284CQ, 36-284E, 36-284FE, 36-284FOEXP, 36-284FS, 36-284STPEXP, 36-289E-1000, 36-289FE, 36-289FOEXP, 36-289FOEXP-1K, 36-289FS, 36-704JCBEXP, 55-929PEAK, 86-244-PRO, 86-244SY, 86-249, 86-249-1000, 86-284, 86-289, 86-699JD-1000, 86-709CAB, BULK-16240CL, BULK-16240HD, BULK-16245, BULK-16280, BULK-86245, BULK-86280, 36-249GUEXP, 36-249GUEXP-1K, 36-249LSEXP, 36-249LSEXP-1K, BULK-16720CL, 16-734GOEMF, 36-734U/N, 86-734GOEM, BULK-15720G, 16-734OOEMC, BULK-16720O, 36-734C, 36-734TOT, 86-734, 86-739-1000, BULK-15720R, 86-649JD, 16-734, 26-738-1000, 26-739, 26-739-N, 26-739PC, 26-739PC1, 36-734GD, 36-734UFA, 36-735SO ,36-735UFA, 36-739E, 36-739UFA, 86-739, 86-739SHER, BULK-16720R, 36-739SO, 26-728-1000, BULK-16720Y, BULK-86720Y, 36-774CHR, 36-779CHR, 18-108, 18-109, 18-109-1000, 18-109-40, BULK-18100, 38-109WO, 36-739LSEXP, 36-739LSEXP-1K, 36-735COA, 26-739-1000, 16-244X52
Other Identification	UF701 Coolant Concentrate, G-05 TERM ADD, Low Temperature Heat Transfer Fluid, 501 coolant concentrate
Recommended Use	Please refer to Product label.
Restrictions on Use	None known.
Manufacturer/Supplier Identifier	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.	1773

SECTION 2. HAZARD IDENTIFICATION

Classification

Acute toxicity (Oral) - Category 4; Reproductive toxicity - Category 1B; Specific target organ toxicity (repeated exposure) - Category 2

Label Elements

Signal Word:

Danger

Hazard Statement(s):
H302 Harmful if swallowed.
H360 May damage fertility or the unborn child.
H373 May cause damage to organs (kidneys) through prolonged or repeated exposure following skin contact and/or if swallowed.

Prevention:
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
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.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response:
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTRE or doctor.
P330 Rinse mouth.
P308 + P313 IF exposed or concerned: Get medical advice/attention.
P314 Get medical advice/attention if you feel unwell.

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:
0.1-1
. % 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	Other Names
Ethylene glycol	107-21-1	80-100		
SODIUM TETRABORATE PENTAHYDRATE	12179-04-3	0.1-1		

Notes

Use of Generic SDS:
If the concentration or actual concentration range of an ingredient of a particular hazardous product in the series is different from the concentration or actual concentration range disclosed for the rest of the series, either the concentration or the actual concentration range must be indicated beside that ingredient under item 3 (Composition/Information on ingredients) of the SDS. Furthermore, if any other specific information element(s) (such as flash point, numerical measure of toxicity, etc.) for a particular hazardous product in the series differs from that of the other products in the series (without affecting the classification), the information element relevant to that hazardous product must be disclosed on the SDS with an indication to which hazardous product each relates.

Source: Health Canada - Technical Guidance on the Requirements of the Hazardous Products Act and the Hazardous Products Regulations WHMIS 2015 Supplier Requirements - pg 117

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Inhalation

Remove source of exposure or move to fresh air. Call a Poison Centre or doctor if you feel unwell.

Skin Contact

Take off 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. Call a Poison Centre or doctor if you feel unwell. Clean clothing, shoes and leather goods.

Eye Contact

If eye irritation persists, get medical advice or attention. Immediately rinse the contaminated eye(s) with lukewarm, gently flowing water for 15-20 minutes, while holding the eyelid(s) open.

Ingestion

Rinse mouth with water. Call a Poison Centre or doctor if you feel unwell.

Most Important Symptoms and Effects, Acute and Delayed

If swallowed: There are 3 stages of effects, which can overlap. Early symptoms can include upset stomach, slurred speech, clumsiness, drowsiness, and convulsions. Second stage symptoms can include rapid heartbeat and breathing, bluish lips and skin, fluid in the lungs and heart failure. In the last stage, there can be kidney stones and kidney damage with lower back pain, and increased then decreased urine production. There may be delayed nervous system effects such as paralysis of the face, clumsiness, impaired hearing and blurred vision. Death can occur at any stage.

Immediate Medical Attention and Special Treatment

Target Organs

Digestive system, nervous system, heart, digestive system, kidneys, skin.

Special Instructions

The signs and symptoms in ethylene glycol poisoning are those of metabolic acidosis, central nervous system depression and kidney injury. Clinical chemistry may reveal anion-gap metabolic acidosis and uremia. Treatment with ethanol to inhibit the metabolism of glycol to oxalate.Early administration of ethanol may counter the toxic effects of ethylene glycol (cardiopulmonary effects attributed to metabolic acidosis and renal damage). Hemodialysis or peritoneal dialysis have been of benefit. Pre-existing respiratory and skin disorders may be aggravated by over-exposure to this product. Treat symptomatically and supportively.

Medical Conditions Aggravated by Exposure

Dermatitis.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Carbon dioxide, dry chemical powder or appropriate foam.

Unsuitable Extinguishing Media

None known.

Specific Hazards Arising from the Product

Can ignite if strongly heated.
In a fire, the following hazardous materials may be generated: irritating chemicals.

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

	ACGIH TLV®		OSHA PEL		AIHA WEEL	
Chemical Name	TWA	STEL	TWA	Ceiling	8-hr TWA	TWA
Ethylene glycol	10 mg/m3	100 mg/m3	Not established	50 ppm		
SODIUM TETRABORATE PENTAHYDRATE	2 mg/m3	6 mg/m3	10 mg/m3	Not established		

Appropriate Engineering Controls

The hazard potential of this product is relatively low. General ventilation is usually adequate. Use local exhaust ventilation, if general ventilation is not adequate to control amount in the air.

Individual Protection Measures

Eye/Face Protection

Not required but it is good practice to wear safety glasses or 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 appropriate cartridge.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	Available in these colours: Clear, Yellow, Gold, Red, Blue, Green, Amber, Pink, Orange, Purple, White, Brown, Grey, Teal.
Odour	Not available
Odour Threshold	Not available
pH	Not available
Melting Point/Freezing Point	-13 ºC (9 ºF) (Ethylene glycol) (melting); -13 ºC (9 ºF) (Ethylene glycol) (freezing)
Initial Boiling Point/Range	197 ºC (387 ºF)
Flash Point	111 ºC (232 ºF) (closed cup) (Ethylene glycol)
Evaporation Rate	< 0.01
Flammability (solid, gas)	Not applicable
Upper/Lower Flammability or Explosive Limit	21.6 - 22.0% (Ethylene glycol) (upper); 3.2% (Ethylene glycol) (lower)
Vapour Pressure	0.090 mm Hg (0.012 kPa) at 20 ºC (Ethylene glycol)
Vapour Density (air = 1)	2.14 (estimated)
Relative Density (water = 1)	1.12 - 1.15 at 20 ºC (Ethylene glycol)
Solubility	Not available in water; Soluble in all proportions in ketones (e.g. acetone).
Partition Coefficient, n-Octanol/Water (Log Kow)	-1.36 at 20 ºC (Ethylene glycol)
Auto-ignition Temperature	398 ºC (748 ºF) (Ethylene glycol)
Decomposition Temperature	Not available
Viscosity	18.86 mm2/s at 20 ºC (estimated) (kinematic); 21 mPa.s at 20 ºC (estimated) (dynamic)

Other Information

Physical State	Liquid
Molecular Weight	Not available

SECTION 10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions of use.

Chemical Stability

Normally stable.

Possibility of Hazardous Reactions

None known.

Conditions to Avoid

High temperatures. Open flames, sparks, static discharge, heat and other ignition sources. Temperatures above 111.0 ºC (231.8 ºF)

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.

SECTION 11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

Skin contact; ingestion.

Acute Toxicity

Chemical Name	LC50	LD50 (oral)	LD50 (dermal)
Ethylene glycol	2725 mg/m3 (rat) (4-hour exposure)	1560 mg/kg Human - Male	9530 mg/kg (rabbit)
SODIUM TETRABORATE PENTAHYDRATE	Not available	2660 mg/kg (rat)	Not available

LC50: Not applicable.

LD50 (oral): Not applicable.

LD50 (dermal): Not applicable.

Skin Corrosion/Irritation

Human experience and animal tests show mild irritation.

Serious Eye Damage/Irritation

May cause serious eye irritation based on information for closely related materials. Symptoms include sore, red eyes, and tearing.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

At high concentrations as a mist nose and throat irritation. Symptoms may include coughing, shortness of breath, difficult breathing and tightness in the chest.

Skin Absorption

At high concentrations may cause Symptoms may include redness, rash, swelling and itching.

Ingestion

Toxic, can cause death based on information for closely related materials. depression of the central nervous system, and effects on the heart and kidneys. In some cases, there may be delayed effects on the nervous system. There are 3 stages of effects, which can overlap. Early symptoms can include upset stomach, slurred speech, clumsiness, drowsiness, and convulsions. Second stage symptoms can include rapid heartbeat and breathing, bluish lips and skin, fluid in the lungs and heart failure. In the last stage, there can be kidney stones and kidney damage with lower back pain, and increased then decreased urine production. There may be delayed nervous system effects such as paralysis of the face, clumsiness, impaired hearing and blurred vision. Death can occur at any stage.

Aspiration Hazard

Not known to be an aspiration hazard.

STOT (Specific Target Organ Toxicity) - Repeated Exposure

May cause dermatitis. Symptoms may include dry, red, cracked skin (dermatitis).
May cause Following skin contact and/or if swallowed: harmful effects on the kidneys.

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
Ethylene glycol	Not Listed	A4	Not Listed	Not Listed
SODIUM TETRABORATE PENTAHYDRATE	Not Listed	A4	Not Listed	Not Listed

Reproductive Toxicity

Development of Offspring

If swallowed: at high concentrations animal studies show effects on the offspring. Known to cause: decreased weight. Embryotoxic (late resorptions) teratogenic(external, soft tissue and skeletal defects) may harm the unborn child.

Sexual Function and Fertility

May cause effects on sexual function and/or fertility. (Sodium Salt of Boron Acid)

Effects on or via Lactation

No information was located.

Germ Cell Mutagenicity

Not known to be a mutagen.

Interactive Effects

No information was located.

Other Information

TOXIC SUBSTANCE: KEEP AWAY FROM ANIMALS AND SMALL CHILDREN.

SECTION 12. ECOLOGICAL INFORMATION

This section is not required by WHMIS.
This section is not required by OSHA HCS 2012.

Ecotoxicity

Acute Aquatic Toxicity

Chemical Name	LC50 Fish	EC50 Crustacea	ErC50 Aquatic Plants	ErC50 Algae
Ethylene glycol	18500 mg/L (Oncorhynchus mykiss (rainbow trout); 96-hour; fresh water)	74000 mg/L (Daphnia magna (water flea); 24 hr)		
SODIUM TETRABORATE PENTAHYDRATE	Not available	Not available		

Chronic Aquatic Toxicity

Chemical Name	NOEC Fish	EC50 Fish	NOEC Crustacea	EC50 Crustacea
Ethylene glycol	39140 mg/L (Oncorhynchus mykiss (rainbow trout))		24000 mg/L (Daphnia magna (water flea))	
SODIUM TETRABORATE PENTAHYDRATE	Not available	Not available		

Persistence and Degradability

No information was located.

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

Not regulated under Canadian TDG regulations.

Regulation	UN No.	Proper Shipping Name	Transport Hazard Class(es)	Packing Group
US DOT	3082	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID (Ethylene glycol)	9	III

Environmental Hazards: Not applicable (Ethylene glycol)

Special Precautions: Please note: In single containers of 5000 lbs capacity or less this product is exempt from DOT regulations (non regulated). Does not require label or placards. Regulated Quantity (RQ)= 5000 lbs (2268 kg) (as ethylene glycol) For bulk shipments equal to or greater than Regulated Quantity (RQ), please adhere to classification as outlined in DOT Classification section.

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

Proof of Dangerous Goods Classification

Date of Classification	December 06, 2016
Technical Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID
Classification	9 PG III
Classification Method	As per regulation for ethylene glycol.

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: Reproductive Harm - www.P65Warnings.ca.gov/product.

Custom Regulatory 1

Consumer Product Safety Improvement Act of 2008 General Conformity Certification
The Supplier identified in Section 1 of this MSDS has evaluated this product and certifies it to be labeled and packaged in compliance with the applicable provisions of the Federal Hazardous Substance Act as stated in 16 CFR 1500 and enforced by the Consumer Product Safety Commission, and where applicable the products that require Child Resistant Closures are packaged in accordance with the Poison Prevention Packaging Act as stated in 16 CFR 1700 and enforced by the Consumer Product Safety Commission. All closures have been tested in accordance with the latest protocols. No other testing is required to certify compliance with the above. The date of manufacture is stamped on the

product container.

SECTION 16. OTHER INFORMATION

SDS Prepared By	Compliance and Regulatory Department
Phone No.	905-878-5544
Date of Preparation	September 13, 2017
Date of Last Revision	September 01, 2020
Revision Indicators	The following SDS content was changed on February 02, 2018: SECTION 1. IDENTIFICATION; Other Identification. The following SDS content was changed on May 28, 2019: SECTION 1. IDENTIFICATION; Other Means of Identification. The following SDS content was changed on July 03, 2019: SECTION 1. IDENTIFICATION; Other Means of Identification. The following SDS content was changed on July 24, 2019: SECTION 1. IDENTIFICATION; Other Means of Identification; Other Identification; SECTION 2. HAZARD IDENTIFICATION; Classification; Of the following product codes: BULK-16720CL, 16-734GOEMF, 36-734U/N, 86-734GOEM, BULK-15720G, 16-734OOEMC, BULK-16720O, 36-734C, 36-734TOT, 86-734, 86-739-1000, BULK-15720R, 86-649JD, 16-734, 26-738-1000, 26-739, 26-739-N, 26-739PC, 26-739PC1, 36-734GD, 36-734UFA, 36-735SO ,36-735UFA, 36-739E, 36-739UFA, 86-739, 86-739SHER, BULK-16720R, 36-739SO, 26-728-1000, BULK-16720Y, BULK-86720Y, 36-774CHR, 36-779CHR, 18-108, 18-109, 18-109-1000, 18-109-40, BULK-18100, 38-109WO The following SDS content was changed on October 30, 2019: SECTION 1. IDENTIFICATION; Other Means of Identification. The following SDS content was changed on April 09, 2020: SECTION 1. IDENTIFICATION; Other Identification. The following SDS content was changed on September 01, 2020: SECTION 1. IDENTIFICATION; Other Means of Identification.
References	CHEMINFO database. Canadian Centre for Occupational Health and Safety (CCOHS).
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.

Cover Sheet

micromeritics®
INSTRUMENT CORPORATION
4356 COMMUNICATIONS DRIVE
NORCROSS, GA 30093-2901 U.S.A.

REV	REVISION DESCRIPTION	BY	DATE	CHK	REL. NO.		
						DWN BY	J. Pittman
D	Update per Customer Request	SI	11/1/2012		120515	ENGR	J. Mocny
C	Revision	JAP	6/25/04	JM	040265	ENGR SIG	P. Hendrix
B	Revision	MD	04/02/03	JM	030200	HR SIG	J. Mocny
A	New format and numbering system	C. Bills	5/24/00	—	990544	QA SIG	A. Dovin
-	Formal Release	C. Bills	6-26-07	—	970446	ES SIG	K. Massengill

MSDS
HYDRAULIC FLUID OD-15-10
(1-L)

SIZE	NUMBER	PAGE
A	920/16002/00MSDS	X of 3

Micromeritics Material Safety Data Sheet

Title : HYDRAULIC FLUID OD-15-10(1-L)
Date of Preparation : 11/01/12

MSDS No. : 920/16002/00MSDS
Revision : D

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.
4356 Communications Drive
Norcross, GA 30093-2901 USA
Contact: Human Resources
Phone: (770) 662-3636
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:

	OSHA PEL		ACGIH TLV		NIOSH REL		NIOSH
Ingredient	**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** ☆☆☆☆☆

HMIS	
H	1
F	1
R	0
PPE†	

†Sec. 8

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).

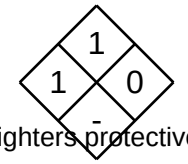
Section 4 - First Aid Measures

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

NFPA



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.

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 (H_2O=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 (ehtyl 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:

Hydrated Lime

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations And According To The Hazardous Products Regulation (February 11, 2015).

Revision Date: 01/01/2022 Date of Issue: 02/01/2022 Version: 3.2

SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Form: Mixture

Product Name: Lafarge Hydrated Lime

Synonyms: Slaked Lime, Dolomitic Hydrated Lime, Lime, Caustic Lime, Lime Hydrate, Calcium Hydroxide, Calcium Dihydroxide, Calcium Magnesium Hydroxide, Type N Lime, Type S Lime

Note: This SDS covers many types of hydrated lime. Individual composition of hazardous constituents will vary between types of hydrated lime.

1.2. Intended Use of the Product

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.

1.3. Name, Address, and Telephone of the Responsible Party

Company – Lafarge Canada

Western Canada
#300 115 Quarry Park Road SE
Calgary, AB T2C 5G9
Phone: (403) 225-5400

Eastern Canada
6509 Airport Road
Mississauga, ON L4V 157
Phone: (905) 738-7070

Website:www.lafarge.ca

1.4. Emergency Telephone Number

Emergency Number : Chemtel 1-800-255-3924 (24 hours)

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

GHS-US/CA Classification

Skin Corr. 1C	H314
Eye Dam. 1	H318
Carc. 1A	H350

Full text of hazard classes and H-statements : see Section 16.

2.2. Label Elements

GHS-US/CA Labeling

Hazard Pictograms (GHS-US/CA) :

GHS05

GHS08

Signal Word (GHS-US/CA) : Danger

Hazard Statements (GHS-US/CA) : H314 - Causes severe skin burns and eye damage.
H318 - Causes serious eye damage.
H350 - May cause cancer (Inhalation).

Precautionary Statements (GHS-US/CA) : P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P260 - Do not breathe dust.
P264 - Wash hands, forearms, and other exposed areas thoroughly after handling.
P280 - Wear protective gloves, protective clothing, and eye protection.
P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for

breathing.
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.
P310 - Immediately call a POISON CENTER or doctor.
P321 - Specific treatment (see Section 4 on this SDS).
P363 - Wash contaminated clothing before reuse.
P405 - Store locked up.
P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations.

2.3. Other Hazards

Exposure may aggravate pre-existing eye, skin, or respiratory conditions. Individuals with lung disease (e.g. bronchitis, emphysema, COPD, pulmonary disease) or sensitivity to hexavalent chromium can be aggravated by exposure.

2.4. Unknown Acute Toxicity (GHS-US/CA)

No data available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixture

Name	Product Identifier	% *	GHS Ingredient Classification
Calcium hydroxide	(CAS-No.) 1305-62-0	50 - 95	Skin Corr. 1C, H314 Eye Dam. 1, H318
Magnesium hydroxide	(CAS-No.) 1309-42-8	0 - 50	Not classified
Calcium oxide	(CAS-No.) 1305-78-8	0 - 5	Skin Irrit. 2, H315 Eye Dam. 1, H318 STOT SE 3, H335 Aquatic Acute 3, H402
Magnesium oxide (MgO)	(CAS-No.) 1309-48-4	0 - 5	Not classified
Limestone	(CAS-No.) 1317-65-3	0 - 3	Not classified
Quartz	(CAS-No.) 14808-60-7	0 - 1	Carc. 1A, H350 STOT SE 3, H335 STOT RE 1, H372

Full text of H-phrases: see Section 16.

*Percentages are listed in weight by weight percentage (w/w%) for liquid and solid ingredients. Gas ingredients are listed in volume by volume percentage (v/v%).

SECTION 4: FIRST AID MEASURES

4.1. Description of First-aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

Inhalation: Remove to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.

Skin Contact: Remove contaminated clothing. Immediately flush skin with plenty of water for at least 30 minutes and continue flushing throughout emergency transport, if needed. Immediately call a poison center or physician. Wash contaminated clothing before reuse.

Eye Contact: Get medical attention immediately and begin flushing eyes with plenty of water for at least 30 minutes and continue flushing eyes throughout emergency transport. Immediately call a poison center or physician. Occasionally lift the upper and lower eyelids during flushing. Remove any contact lenses, if possible. Chemical burns should be treated promptly by a physician.

Ingestion: Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention.

4.2. Most Important Symptoms and Effects Both Acute and Delayed

General: Causes severe skin burns and eye damage. May cause cancer.

Inhalation: May be corrosive to the respiratory tract. The three types of silicosis include: 1) 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); 2) Accelerated silicosis – occurs after exposure to larger amounts of respirable crystalline silica over a shorter period of time (5-15 years); 3) 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. Inflammation, scarring, and symptoms progress faster in accelerated silicosis than in simple silicosis. 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.

Skin Contact: Causes severe irritation which will progress to chemical burns. Hydrated lime may cause dry skin, discomfort, irritation, severe burns. Exposure of sufficient duration to wet or dry hydrated lime can cause serious, potentially irreversible damage to skin due to chemical (caustic) burns, including third degree burns. A skin exposure may be hazardous even if there is no pain or discomfort.

Eye Contact: Potentially causes permanent damage to the cornea, iris, or conjunctiva. Hydrated lime dust may cause immediate or delayed irritation or inflammation. Eye contact with 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.

Ingestion: May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract.

Chronic Symptoms: May cause cancer.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention. If medical advice is needed, have product container or label at hand.

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing Media

Suitable Extinguishing Media: Water spray, dry chemical, foam, carbon dioxide.

Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy stream of water may spread fire.

5.2. Special Hazards Arising From the Substance or Mixture

Fire Hazard: Not considered flammable but may burn at high temperatures.

Explosion Hazard: Product is not explosive.

Reactivity: May react exothermically with water releasing heat. Adding an acid to a base or base to an acid may cause a violent reaction.

5.3. Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire.

Firefighting Instructions: Use water spray or fog for cooling exposed containers.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Hazardous Combustion Products: Silicon oxides. Calcium oxides.

Reference to Other Sections

Refer to Section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Do not breathe dust. Do not get in eyes, on skin, or on clothing. Do not handle until all safety precautions have been read and understood.

6.1.1. For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protective equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

6.1.2. For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit. Ventilate area.

6.2. Environmental Precautions

Prevent entry to sewers and public waters.

6.3. Methods and Materials for Containment and Cleaning Up

For Containment: Contain solid spills with appropriate barriers and prevent migration and entry into sewers or streams. As an immediate precautionary measure, isolate spill or leak area in all directions.

Methods for Cleaning Up: Clean up spills immediately and dispose of waste safely. Recover the product by vacuuming, shoveling or sweeping. Transfer spilled material to a suitable container for disposal. Contact competent authorities after a spill. Cautiously neutralize spilled solid. Avoid actions that cause dust to become airborne during clean-up such as dry sweeping or using compressed air. Use HEPA vacuum or thoroughly wet with water to clean-up dust. Use PPE described in Section 8.

6.4. Reference to Other Sections

See Section 8 for exposure controls and personal protection and Section 13 for disposal considerations.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Additional Hazards When Processed: May release corrosive vapors. Cutting, crushing or grinding wet or dry lime or other crystalline silica-bearing materials will release respirable crystalline silica. Use all appropriate measures of dust control or suppression, and Personal Protective Equipment (PPE) described in Section 8 below.

Precautions for Safe Handling: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Do not get in eyes, on skin, or on clothing. Handle empty containers with care because they may still present a hazard. Do not breathe dust. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Comply with applicable regulations.

Storage Conditions: Keep container closed when not in use. Store in a dry, cool place. Store in original container or corrosive resistant and/or lined container. Store away from incompatible materials.

Incompatible Materials: 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.

7.3. Specific End Use(s)

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.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control Parameters

For substances listed in Section 3 that are not listed here, there are no established Exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), AIHA (WEEL), NIOSH (REL), OSHA (PEL), Canadian provincial governments, or the Mexican government.

Quartz (14808-60-7)		
Mexico	OEL TWA (mg/m³)	0.1 mg/m³ (respirable fraction)
USA ACGIH	ACGIH TWA (mg/m³)	0.025 mg/m³ (respirable particulate matter)
USA ACGIH	ACGIH chemical category	A2 - Suspected Human Carcinogen
USA OSHA	OSHA PEL (TWA) (mg/m³)	50 µg/m³
USA NIOSH	NIOSH REL (TWA) (mg/m³)	0.05 mg/m³ (respirable dust)
USA IDLH	US IDLH (mg/m³)	50 mg/m³ (respirable dust)
Alberta	OEL TWA (mg/m³)	0.025 mg/m³ (respirable particulate)
British Columbia	OEL TWA (mg/m³)	0.025 mg/m³ (respirable)
Manitoba	OEL TWA (mg/m³)	0.025 mg/m³ (respirable particulate matter)
New Brunswick	OEL TWA (mg/m³)	0.1 mg/m³ (respirable fraction)
Newfoundland & Labrador	OEL TWA (mg/m³)	0.025 mg/m³ (respirable particulate matter)
Nova Scotia	OEL TWA (mg/m³)	0.025 mg/m³ (respirable particulate matter)
Nunavut	OEL TWA (mg/m³)	0.05 mg/m³ (respirable fraction)
Northwest Territories	OEL TWA (mg/m³)	0.05 mg/m³ (respirable fraction)
Ontario	OEL TWA (mg/m³)	0.1 mg/m³ (designated substances regulation-respirable)
Prince Edward Island	OEL TWA (mg/m³)	0.025 mg/m³ (respirable particulate matter)

Québec	VEMP (mg/m³)	0.1 mg/m³ (respirable dust)
Saskatchewan	OEL TWA (mg/m³)	0.05 mg/m³ (respirable fraction)
Yukon	OEL TWA (mg/m³)	300 particle/mL

Limestone (1317-65-3)		
Mexico	OEL TWA (mg/m³)	10 mg/m³
Mexico	OEL STEL (mg/m³)	20 mg/m³
USA OSHA	OSHA PEL (TWA) (mg/m³)	15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)
USA NIOSH	NIOSH REL (TWA) (mg/m³)	10 mg/m³ (total dust) 5 mg/m³ (respirable dust)
Alberta	OEL TWA (mg/m³)	10 mg/m³
British Columbia	OEL STEL (mg/m³)	20 mg/m³ (total dust)
British Columbia	OEL TWA (mg/m³)	10 mg/m³ (total dust) 3 mg/m³ (respirable fraction)
New Brunswick	OEL TWA (mg/m³)	10 mg/m³ (particulate matter containing no Asbestos and <1% Crystalline silica)
Nunavut	OEL STEL (mg/m³)	20 mg/m³
Nunavut	OEL TWA (mg/m³)	10 mg/m³
Northwest Territories	OEL STEL (mg/m³)	20 mg/m³
Northwest Territories	OEL TWA (mg/m³)	10 mg/m³
Québec	VEMP (mg/m³)	10 mg/m³ (Limestone, containing no Asbestos and <1% Crystalline silica-total dust)
Saskatchewan	OEL STEL (mg/m³)	20 mg/m³
Saskatchewan	OEL TWA (mg/m³)	10 mg/m³
Yukon	OEL STEL (mg/m³)	20 mg/m³
Yukon	OEL TWA (mg/m³)	30 mppcf 10 mg/m³

Calcium oxide (1305-78-8)		
Mexico	OEL TWA (mg/m³)	2 mg/m³
USA ACGIH	ACGIH TWA (mg/m³)	2 mg/m³
USA OSHA	OSHA PEL (TWA) (mg/m³)	5 mg/m³
USA NIOSH	NIOSH REL (TWA) (mg/m³)	2 mg/m³
USA IDLH	US IDLH (mg/m³)	25 mg/m³
Alberta	OEL TWA (mg/m³)	2 mg/m³
British Columbia	OEL TWA (mg/m³)	2 mg/m³
Manitoba	OEL TWA (mg/m³)	2 mg/m³
New Brunswick	OEL TWA (mg/m³)	2 mg/m³
Newfoundland & Labrador	OEL TWA (mg/m³)	2 mg/m³
Nova Scotia	OEL TWA (mg/m³)	2 mg/m³
Nunavut	OEL STEL (mg/m³)	4 mg/m³
Nunavut	OEL TWA (mg/m³)	2 mg/m³
Northwest Territories	OEL STEL (mg/m³)	4 mg/m³
Northwest Territories	OEL TWA (mg/m³)	2 mg/m³
Ontario	OEL TWA (mg/m³)	2 mg/m³
Prince Edward Island	OEL TWA (mg/m³)	2 mg/m³
Québec	VEMP (mg/m³)	2 mg/m³
Saskatchewan	OEL STEL (mg/m³)	4 mg/m³
Saskatchewan	OEL TWA (mg/m³)	2 mg/m³
Yukon	OEL STEL (mg/m³)	4 mg/m³
Yukon	OEL TWA (mg/m³)	2 mg/m³

Magnesium oxide (MgO) (1309-48-4)		
Mexico	OEL TWA (mg/m³)	10 mg/m³ (fume)

USA ACGIH	ACGIH TWA (mg/m³)	10 mg/m³ (inhalable particulate matter)
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA OSHA	OSHA PEL (TWA) (mg/m³)	15 mg/m³ (fume, total particulate)
USA IDLH	US IDLH (mg/m³)	750 mg/m³ (fume)
Alberta	OEL TWA (mg/m³)	10 mg/m³ (fume)
British Columbia	OEL STEL (mg/m³)	10 mg/m³ (respirable dust and fume)
British Columbia	OEL TWA (mg/m³)	10 mg/m³ (fume, inhalable) 3 mg/m³ (respirable dust and fume)
Manitoba	OEL TWA (mg/m³)	10 mg/m³ (inhalable particulate matter)
New Brunswick	OEL TWA (mg/m³)	10 mg/m³ (fume)
Newfoundland & Labrador	OEL TWA (mg/m³)	10 mg/m³ (inhalable particulate matter)
Nova Scotia	OEL TWA (mg/m³)	10 mg/m³ (inhalable particulate matter)
Nunavut	OEL STEL (mg/m³)	20 mg/m³ (inhalable fraction)
Nunavut	OEL TWA (mg/m³)	10 mg/m³ (inhalable fraction)
Northwest Territories	OEL STEL (mg/m³)	20 mg/m³ (inhalable fraction)
Northwest Territories	OEL TWA (mg/m³)	10 mg/m³ (inhalable fraction)
Ontario	OEL TWA (mg/m³)	10 mg/m³ (inhalable)
Prince Edward Island	OEL TWA (mg/m³)	10 mg/m³ (inhalable particulate matter)
Québec	VEMP (mg/m³)	10 mg/m³ (fume)
Saskatchewan	OEL STEL (mg/m³)	20 mg/m³ (inhalable fraction)
Saskatchewan	OEL TWA (mg/m³)	10 mg/m³ (inhalable fraction)
Yukon	OEL STEL (mg/m³)	10 mg/m³ (fume)
Yukon	OEL TWA (mg/m³)	10 mg/m³ (fume)

Calcium hydroxide (1305-62-0)		
Mexico	OEL TWA (mg/m³)	5 mg/m³
USA ACGIH	ACGIH TWA (mg/m³)	5 mg/m³
USA OSHA	OSHA PEL (TWA) (mg/m³)	15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)
USA NIOSH	NIOSH REL (TWA) (mg/m³)	5 mg/m³
Alberta	OEL TWA (mg/m³)	5 mg/m³
British Columbia	OEL TWA (mg/m³)	5 mg/m³
Manitoba	OEL TWA (mg/m³)	5 mg/m³
New Brunswick	OEL TWA (mg/m³)	5 mg/m³
Newfoundland & Labrador	OEL TWA (mg/m³)	5 mg/m³
Nova Scotia	OEL TWA (mg/m³)	5 mg/m³
Nunavut	OEL STEL (mg/m³)	10 mg/m³
Nunavut	OEL TWA (mg/m³)	5 mg/m³
Northwest Territories	OEL STEL (mg/m³)	10 mg/m³
Northwest Territories	OEL TWA (mg/m³)	5 mg/m³
Ontario	OEL TWA (mg/m³)	5 mg/m³
Prince Edward Island	OEL TWA (mg/m³)	5 mg/m³
Québec	VEMP (mg/m³)	5 mg/m³
Saskatchewan	OEL STEL (mg/m³)	10 mg/m³
Saskatchewan	OEL TWA (mg/m³)	5 mg/m³
Yukon	OEL STEL (mg/m³)	10 mg/m³
Yukon	OEL TWA (mg/m³)	5 mg/m³

8.2. Exposure Controls

Appropriate Engineering Controls: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed.

Personal Protective Equipment: Gloves. Protective clothing. Protective goggles. Insufficient ventilation and/or dust generation: wear respiratory protection.

Materials for Protective Clothing: Chemically resistant materials and fabrics. Corrosion-proof clothing.

Hand Protection: Wear protective gloves.

Eye and Face Protection: Chemical safety goggles and face shield.

Skin and Body Protection: Wear suitable protective clothing.

Respiratory Protection: If exposure limits are exceeded or irritation is experienced, NIOSH approved respiratory protection should be worn. In case of inadequate ventilation, oxygen deficient atmosphere, or where exposure levels are not known wear approved respiratory protection.

Other Information: When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

Physical State	:	Solid
Appearance	:	White or Grey Powder
Odor	:	Odorless
Odor Threshold	:	Not available
pH	:	12 - 13 (In Water)
Evaporation Rate	:	Not available
Melting Point	:	Not available
Freezing Point	:	Not available
Boiling Point	:	> 1000 °C (> 1832 °F)
Flash Point	:	Not available
Auto-ignition Temperature	:	Not available
Decomposition Temperature	:	Not available
Flammability (solid, gas)	:	Not available
Lower Flammable Limit	:	Not available
Upper Flammable Limit	:	Not available
Vapor Pressure	:	Not available
Relative Vapor Density at 20°C	:	Not available
Relative Density	:	1.9 - 2.4 (Water = 1)
Specific Gravity	:	Not available
Solubility	:	Negligible.
Partition Coefficient: N-Octanol/Water	:	Not available
Viscosity	:	Not available

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity: May react exothermically with water releasing heat. Adding an acid to a base or base to an acid may cause a violent reaction.

10.2. Chemical Stability: Stable under recommended handling and storage conditions (see Section 7).

10.3. Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

10.4. Conditions to Avoid: Extremely high or low temperatures and incompatible materials.

10.5. Incompatible Materials: 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.

10.6. Hazardous Decomposition Products: Hydrated lime will decompose at 540ºC to produce calcium oxide (quicklime), magnesium oxide, and water.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on Toxicological Effects - Product

Acute Toxicity (Oral): Not classified

Acute Toxicity (Dermal): Not classified

Acute Toxicity (Inhalation): Not classified

LD50 and LC50 Data: Not available

Skin Corrosion/Irritation: Causes severe skin burns and eye damage.

pH: 12 - 13 (in water)

Eye Damage/Irritation: Causes serious eye damage.

pH: 12 - 13 (in water)

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Carcinogenicity: May cause cancer (Inhalation).

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: May be corrosive to the respiratory tract. The three types of silicosis include: 1) 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); 2) Accelerated silicosis – occurs after exposure to larger amounts of respirable crystalline silica over a shorter period of time (5-15 years); 3) 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. Inflammation, scarring, and symptoms progress faster in accelerated silicosis than in simple silicosis. 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.

Symptoms/Injuries After Skin Contact: Causes severe irritation which will progress to chemical burns. Hydrated lime may cause dry skin, discomfort, irritation, severe burns. Exposure of sufficient duration to wet or dry hydrated lime can cause serious, potentially irreversible damage to skin due to chemical (caustic) burns, including third degree burns. A skin exposure may be hazardous even if there is no pain or discomfort.

Symptoms/Injuries After Eye Contact: Potentially causes permanent damage to the cornea, iris, or conjunctiva. Hydrated lime dust may cause immediate or delayed irritation or inflammation. Eye contact with 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.

Symptoms/Injuries After Ingestion: May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract.

Chronic Symptoms: May cause cancer.

11.2. Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

Quartz (14808-60-7)	
LD50 Oral Rat	> 5000 mg/kg
LD50 Dermal Rat	> 5000 mg/kg
Calcium oxide (1305-78-8)	
LD50 Oral Rat	> 2000 mg/kg
LD50 Dermal Rabbit	> 2500 mg/kg
Magnesium oxide (MgO) (1309-48-4)	
LD50 Oral Rat	3870 mg/kg
Calcium hydroxide (1305-62-0)	
LD50 Oral Rat	7340 mg/kg
Magnesium hydroxide (1309-42-8)	
LD50 Oral Rat	8500 mg/kg
Quartz (14808-60-7)	

IARC Group	1
National Toxicology Program (NTP) Status	Known Human Carcinogens.
OSHA Hazard Communication Carcinogen List	In OSHA Hazard Communication Carcinogen list.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecology - General: Not classified.

Calcium oxide (1305-78-8)	
LC50 Fish 1	50.6 mg/l

12.2. Persistence and Degradability

Hydrated Lime	
Persistence and Degradability	Not established.

12.3. Bioaccumulative Potential

Hydrated Lime	
Bioaccumulative Potential	Not established.

Calcium oxide (1305-78-8)	
BCF Fish 1	(no bioaccumulation)

Calcium hydroxide (1305-62-0)	
BCF Fish 1	(no bioaccumulation)

12.4. Mobility in Soil

Not available

12.5. Other Adverse Effects

Other Information: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

Additional Information: Container may remain hazardous when empty. Continue to observe all precautions.

Ecology - Waste Materials: Avoid release to the environment.

SECTION 14: TRANSPORT INFORMATION

The shipping description(s) stated herein were prepared in accordance with certain assumptions at the time the SDS was authored, and can vary based on a number of variables that may or may not have been known at the time the SDS was issued.

14.1. In Accordance with DOT Not regulated for transport

14.2. In Accordance with IMDG Not regulated for transport

14.3. In Accordance with IATA Not regulated for transport

14.4. In Accordance with TDG Not regulated for transport

SECTION 15: REGULATORY INFORMATION

15.1. US Federal Regulations

Hydrated Lime	
SARA Section 311/312 Hazard Classes	Health hazard - Skin corrosion or Irritation Health hazard - Serious eye damage or eye irritation Health hazard - Carcinogenicity

Quartz (14808-60-7)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Limestone (1317-65-3)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Calcium oxide (1305-78-8)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Magnesium oxide (MgO) (1309-48-4)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Calcium hydroxide (1305-62-0)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Magnesium hydroxide (1309-42-8)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. US State Regulations

Quartz (14808-60-7)

U.S. - California - Proposition 65 - Carcinogens List	WARNING: This product contains chemicals known to the State of California to cause cancer.

Quartz (14808-60-7)

U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Limestone (1317-65-3)

U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Calcium oxide (1305-78-8)

U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Magnesium oxide (MgO) (1309-48-4)

U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Calcium hydroxide (1305-62-0)

U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

15.3. Canadian Regulations

Quartz (14808-60-7)

Listed on the Canadian DSL (Domestic Substances List)

Limestone (1317-65-3)

Listed on the Canadian NDSL (Non-Domestic Substances List)

Calcium oxide (1305-78-8)

Listed on the Canadian DSL (Domestic Substances List)

Magnesium oxide (MgO) (1309-48-4)

Listed on the Canadian DSL (Domestic Substances List)

Calcium hydroxide (1305-62-0)

Listed on the Canadian DSL (Domestic Substances List)

Magnesium hydroxide (1309-42-8)

Listed on the Canadian DSL (Domestic Substances List)

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Date of Preparation or Latest Revision : January 1, 2022

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200 and Canada's Hazardous Products Regulations (HPR) SOR/2015-17.

GHS Full Text Phrases:

Aquatic Acute 3	Hazardous to the aquatic environment - Acute Hazard Category 3
Carc. 1A	Carcinogenicity Category 1A
Eye Dam. 1	Serious eye damage/eye irritation Category 1
Skin Corr. 1C	Skin corrosion/irritation Category 1C
Skin Irrit. 2	Skin corrosion/irritation Category 2
STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H318	Causes serious eye damage
H335	May cause respiratory irritation
H350	May cause cancer
H372	Causes damage to organs through prolonged or repeated exposure
H402	Harmful to aquatic life

An electronic version of this SDS is available on www.lafarge.ca under the Health and Safety Section. Please direct any inquiries regarding the content of this SDS to SDSinfo@Lafarge.com.

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NA GHS SDS 2015 (Can, US, Mex)

Lead

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 12/15/2014 Revision date: 12/15/2014 Version: 1.1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Substance

CAS No : 7439-92-1

Formula : Pb

Synonyms : C.I. 77575, in massive state / elemental lead, in massive state / glover, in massive state

BIG no : 10073

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

Use of the substance/mixture : Solder
Battery: component
Construction
Electrodes

1.3. Details of the supplier of the safety data sheet

GSC International, Inc.
1747 N. Deffer Drive
Nixa,
MO 65714
United States of America

Tel: 417-374-7431
Fax: 417-374-7442
Email: info@gscinternationalinc.com

1.4. Emergency telephone number

Country	Organization/Company	Address	Emergency number
MEXICO	Servicio de Informacion Toxicologica Sintox	Tintoreto #32 Edif. a Desp. Col. Nochebuena Mixcoac México, D.F.	1 800 009 2800 +52 55 5611 2634 /+52 55 5598 9095
UNITED STATES OF AMERICA	American Association of Poison Control Centers		1-800-222-1222

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)

Acute Tox. 4 (Oral)	H302
Acute Tox. 4 (Inhalation)	H332
Carc. 1B	H350
Repr. 1A	H360
STOT RE 2	H373
Aquatic Acute 1	H400
Aquatic Chronic 1	H410

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :

GHS07 GHS08 GHS09

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H302+H332 - Harmful if swallowed or if inhaled
H350 - May cause cancer
H360 - May damage fertility or the unborn child
H373 - May cause damage to organs through prolonged or repeated exposure

H400 - Very toxic to aquatic life
H410 - Very toxic to aquatic life with long lasting effects

Precautionary statements (GHS-US) : P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P260 - Do not breathe dust, fume
P264 - Wash hands thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P273 - Avoid release to the environment
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P308+P313 - If exposed or concerned: Get medical advice/attention
P314 - Get medical advice/attention if you feel unwell
P501 - Dispose of contents/container to a licensed hazardous-waste disposal contractor or collection site except for empty clean containers which can be disposed of as non-hazardous waste

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS-US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substance

Name	Product identifier	%	Classification (GHS-US)
Lead (Main constituent)	(CAS No) 7439-92-1	> 99,9	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation), H332 Carc. 1B, H350 Repr. 1A, H360 STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410

Full text of H-phrases: see section 16

3.2. Mixture

Not applicable

4.1. Description of first aid measures

First-aid measures general : If you feel unwell, seek medical advice. IF exposed or concerned: Get medical advice/attention. Call a poison center/doctor/physician if you feel unwell.

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing. Not applicable. Call a poison center/doctor/physician if you feel unwell.

First-aid measures after skin contact : Not applicable. Wash skin with plenty of water.

First-aid measures after eye contact : Not applicable. Rinse eyes with water as a precaution.

First-aid measures after ingestion : Not applicable. Rinse mouth. Call a poison center/doctor/physician if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : No effects known.

Symptoms/injuries after skin contact : No effects known.

Symptoms/injuries after eye contact : No effects known.

Symptoms/injuries after ingestion : No effects known.

Chronic symptoms : No effects known.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Adapt extinguishing media to the environment.

Unsuitable extinguishing media : No unsuitable extinguishing media known.

5.2. Special hazards arising from the substance or mixture

Fire hazard : DIRECT FIRE HAZARD. Non combustible.

Explosion hazard	:	DIRECT EXPLOSION HAZARD. No data available on direct explosion hazard. INDIRECT EXPLOSION HAZARD. No data available on indirect explosion hazard.
Reactivity	:	On burning: formation of metallic fumes. Oxidizes on exposure to air.

5.3. Advice for firefighters

Precautionary measures fire	:	Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to heat: have neighborhood close doors and windows.
Firefighting instructions	:	Dilute toxic gases with water spray. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it.
Protection during firefighting	:	Heat/fire exposure: compressed air/oxygen apparatus. Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment	:	Gloves. Protective clothing. See "Material-Handling" to select protective clothing.
Emergency procedures	:	Mark the danger area. No naked flames.

6.1.2. For emergency responders

Protective equipment	:	Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment. Prevent soil and water pollution. Prevent spreading in sewers. Notify authorities if product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment	:	Not applicable. Collect spillage.
Methods for cleaning up	:	Recover mechanically the product. Pick-up the material. Take collected spill to manufacturer/competent authority. Notify authorities if product enters sewers or public waters.
Other information	:	Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	:	Meet the legal requirements. Do not discharge the waste into the drain. Handle unclean empty containers as full ones. Observe strict hygiene. Measure the concentration in the atmosphere. Carry out operations in the open/under local exhaust/ventilation or with respiratory protection. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust, fume. Use only outdoors or in a well-ventilated area. Take all necessary technical measures to avoid or minimize the release of the product on the workplace. Limit quantities of product at the minimum necessary for handling and limit the number of exposed workers. Provide local exhaust or general room ventilation. Wear personal protective equipment. Floors, walls and other surfaces in the hazard area must be cleaned regularly.
Hygiene measures	:	Separate working clothes from town clothes. Launder separately. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	:	Does not require any specific or particular technical measures. Comply with applicable regulations.
Storage conditions	:	Store locked up. Store in a well-ventilated place. Keep cool.
Incompatible materials	:	Strong acids, strong bases and oxidation agents.
Heat-ignition	:	KEEP SUBSTANCE AWAY FROM: heat sources.
Prohibitions on mixed storage	:	KEEP SUBSTANCE AWAY FROM: oxidizing agents. Strong acids. Strong bases.
Storage area	:	Meet the legal requirements.
Special rules on packaging	:	SPECIAL REQUIREMENTS: closing. correctly labeled. meet the legal requirements. Secure fragile packaging in solid containers.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Lead (7439-92-1)		
ACGIH	ACGIH TWA (mg/m³)	0,05 mg/m³
ACGIH	Remark (ACGIH)	CNS & PNS impair
OSHA	Not applicable	

8.2. Exposure controls

Appropriate engineering controls : Provide adequate general and local exhaust ventilation. Ensure good ventilation of the work station.

Personal protective equipment : Protective goggles. Gloves.

Materials for protective clothing : GIVE EXCELLENT RESISTANCE: No data available. GIVE GOOD RESISTANCE: butyl rubber. PVC. GIVE LESS RESISTANCE: No data available. GIVE POOR RESISTANCE: No data available.

Hand protection : protective gloves.

Eye protection : Safety glasses.

Skin and body protection : Not required for normal conditions of use.

Respiratory protection : Wear respiratory protection.

Environmental exposure controls : Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Solid

Appearance : Metal.

Molecular mass : 207,20 g/mol

Color : White to blue-grey

Odor : Odorless

Odor threshold : No data available

pH : No data available

Relative evaporation rate (butyl acetate=1) : No data available

Melting point : 327 °C

Freezing point : No data available

Boiling point : 1740 °C

Flash point : Not applicable

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Flammability (solid, gas) : No data available

Vapor pressure : < 0,1 hPa

Relative vapor density at 20 °C : No data available

Relative density : 11,3

Specific gravity / density : 11340 kg/m³

Solubility : insoluble in water. Substance sinks in water. Soluble in nitric acid. Insoluble in organic solvents. Water: < 0,1 g/100ml

Log Pow : 0,73 (Estimated value)

Log Kow : No data available

Viscosity, kinematic	:	Not applicable
Viscosity, dynamic	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	No data available
Explosive limits	:	No data available

9.2. Other information

VOC content : Not applicable (inorganic)

SECTION 10: Stability and reactivity

10.1. Reactivity

On burning: formation of metallic fumes. Oxidizes on exposure to air.

10.2. Chemical stability

Unstable on exposure to air.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

No additional information available

10.5. Incompatible materials

Acids. Bases.

10.6. Hazardous decomposition products

Thermal decomposition generates : fume.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Oral: Harmful if swallowed. Inhalation: Harmful if inhaled.

Lead (\f)7439-92-1	
LD50 oral rat	> 2000 mg/kg body weight (Rat; Weight of evidence)
LD50 dermal rat	> 2000 mg/kg body weight (Rat; Experimental value; OECD 402: Acute Dermal Toxicity)
ATE US (oral)	500,000 mg/kg body weight
ATE US (gases)	4500,000 ppmV/4h
ATE US (vapors)	11,000 mg/l/4h
ATE US (dust, mist)	1,500 mg/l/4h
Additional information	Lead massive metal is not considered to be acutely toxic. It is not easily inhaled or ingested, and if it is accidentally ingested normally passes through the gastrointestinal system without significant absorption into the body. Lead is not easily absorbed through the skin.

Skin corrosion/irritation : Not classified
(Based on available data, the classification criteria are not met)

Serious eye damage/irritation : Not classified
(Based on available data, the classification criteria are not met)

Respiratory or skin sensitization : Not classified
(Based on available data, the classification criteria are not met)

Germ cell mutagenicity : Not classified
(Based on available data, the classification criteria are not met)

Carcinogenicity : May cause cancer.

Lead (7439-92-1)	
Additional information	There is some evidence that inorganic lead compounds may have a carcinogenic effect, and they have been classified by IARC as probably carcinogenic to humans. However, it is considered that this classification does not apply to lead in articles, given the very low bioavailability of metallic lead. Carcinogenicity studies of lead metal powder have been negative. Epidemiology studies of workers exposed to inorganic lead compounds have found a limited association with stomach cancer. IARC has concluded that lead metal is possibly carcinogenic to humans (Group aB).
IARC group	2B - Possibly carcinogenic to humans
National Toxicology Program (NTP) Status	3 - Reasonably anticipated to be Human Carcinogen

Reproductive toxicity : May damage fertility or the unborn child.

Specific target organ toxicity (single exposure) : Not classified

(Based on available data, the classification criteria are not met)

Specific target organ toxicity (repeated exposure) : May cause damage to organs through prolonged or repeated exposure.

Lead (7439-92-1)	
Additional information	Lead is a cumulative poison and may be absorbed into the body through ingestion or inhalation. Although inhalation and ingestion of lead in massive form are unlikely, poor hygiene practises may result in hand to mouth transfer which maybe significant over a prolonged period of time. Inorganic lead compounds have been documented in observational human studies to produce toxicity in multiple organ systems and body function including the haemotopoetic (blood) system, kidney function, reproductive function and the central nervous system.

Aspiration hazard : Not classified

(Based on available data, the classification criteria are not met)

Symptoms/injuries after inhalation : No effects known.

Symptoms/injuries after skin contact : No effects known.

Symptoms/injuries after eye contact : No effects known.

Symptoms/injuries after ingestion : No effects known.

Chronic symptoms : No effects known.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Dangerous for the environment. Very toxic to aquatic life with long lasting effects.

Ecology - air : Not dangerous for the ozone layer (Regulation (EC) No 1005/2009). Not included in the list of fluorinated greenhouse gases (Regulation (EC) No 842/2006). TA-Luft Klasse 5.2.2/II.

Ecology - water : No water pollutant (surface water). Maximum concentration in drinking water: 0.010 mg/l (lead) (Directive 98/83/EC). Highly toxic to aquatic organisms.

Lead (7439-92-1)	
LC50 fish 1	2,8 (0,44 - 542) mg/l (96h) Coughlan, D.J., S.P. Gloss, and J. Kubota 1986. Acute and Sub-Chronic Toxicity of Lead to the Early Life Stages of Small mouth Bass (Micropterus dolomieui). Water Air Soil Pollut. 28(3/4):265-275
EC50 Daphnia 1	4,46 (0,53 - 5,1) mg/l (48h) Govindarajan, S., C.P. Valsaraj, R. Mohan, V. Hariprasad, and R. Ramasubramanian 1993. Toxicity of Heavy Metals in Aquaculture Organisms: Penaeus indicus, Perna viridis, Artemia salina and Skeletonema costatum. Pollut.Res. 12(3):187-189

12.2. Persistence and degradability

Lead (7439-92-1)	
Persistence and degradability	Biodegradability: Not applicable. No (test)data available on mobility of the substance.
ThOD	Not applicable (inorganic)

12.3. Bioaccumulative potential

Lead (7439-92-1)	
Log Pow	0,73 (Estimated value)
Bioaccumulative potential	Low bioaccumulation potential (Log Kow < 4).

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on ozone layer :

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Reuse or recycle following decontamination. Remove to an authorized dump (Class I). Do not discharge into surface water (2000/60/EC, Council decision 2455/2001/EC, O.J. L331 of 15/12/2001).

Additional information : LWCA (the Netherlands): KGA category 05. Hazardous waste according to Directive 2008/98/EC.

SECTION 14: Transport information

In accordance with DOT

Transport document description : UN3077 Environmentally hazardous substances, solid, n.o.s. Lead(7439-92-1), 9, III

UN-No.(DOT) : UN3077

Proper Shipping Name (DOT) : Environmentally hazardous substances, solid, n.o.s.
Lead(7439-92-1)

Department of Transportation (DOT) Hazard Classes : 9 - Class 9 - Miscellaneous hazardous material 49 CFR 173.140

Hazard labels (DOT) : 9 - Class 9 (Miscellaneous dangerous materials)

DOT Symbols : G - Identifies PSN requiring a technical name

Packing group (DOT) : III - Minor Danger

DOT Special Provisions (49 CFR 172.102)	:	8 - A hazardous substance that is not a hazardous waste may be shipped under the shipping description “Other regulated substances, liquid or solid, n.o.s.”, as appropriate. In addition, for solid materials, special provision B54 applies. 146 - This description may be used for a material that poses a hazard to the environment but does not meet the definition for a hazardous waste or a hazardous substance, as defined in 171.8 of this subchapter, or any hazard class as defined in Part 173 of this subchapter, if it is designated as environmentally hazardous by the Competent Authority of the country of origin, transit or destination. 335 - Mixtures of solids that are not subject to this subchapter and environmentally hazardous liquids or solids may be classified as “Environmentally hazardous substances, solid, n.o.s,” UN3077 and may be transported under this entry, provided there is no free liquid visible at the time the material is loaded or at the time the packaging or transport unit is closed. Each transport unit must be leak-proof when used as bulk packaging. A112 - Notwithstanding the quantity limits shown in Column (9A) and (9B) for this entry, the following IBCs are authorized for transportation aboard passenger and cargo-only aircraft. Each IBC may not exceed a maximum net quantity of 1,000 kg: a. Metal: 11A, 11B, 11N, 21A, 21B and 21N b. Rigid plastics: 11H1, 11H2, 21H1 and 21H2 c. Composite with plastic inner receptacle: 11HZ1, 11HZ2, 21HZ1 and 21HZ2 d. Fiberboard: 11G e. Wooden: 11C, 11D and 11F (with inner liners) f. Flexible: 13H2, 13H3, 13H4, 13H5, 13L2, 13L3, 13L4, 13M1 and 13M2 (flexible IBCs must be sift-proof and water resistant or must be fitted with a sift-proof and water resistant liner). B54 - Open-top, sift-proof rail cars are also authorized. IB8 - Authorized IBCs: Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2); Fiberboard (11G); Wooden (11C, 11D and 11F); Flexible (13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 or 13M2). IP3 - Flexible IBCs must be sift-proof and water-resistant or must be fitted with a sift-proof and water-resistant liner. N20 - A 5M1 multi-wall paper bag is authorized if transported in a closed transport vehicle. T1 - 1.5 178.274(d)(2) Normal..... 178.275(d)(2) TP33 - The portable tank instruction assigned for this substance applies for granular and powdered solids and for solids which are filled and discharged at temperatures above their melting point which are cooled and transported as a solid mass. Solid substances transported or offered for transport above their melting point are authorized for transportation in portable tanks conforming to the provisions of portable tank instruction T4 for solid substances of packing group III or T7 for solid substances of packing group II, unless a tank with more stringent requirements for minimum shell thickness, maximum allowable working pressure, pressure-relief devices or bottom outlets are assigned in which case the more stringent tank instruction and special provisions shall apply. Filling limits must be in accordance with portable tank special provision TP3. Solids meeting the definition of an elevated temperature material must be transported in accordance with the applicable requirements of this subchapter.
DOT Packaging Exceptions (49 CFR 173.xxx)	:	155
DOT Packaging Non Bulk (49 CFR 173.xxx)	:	213
DOT Packaging Bulk (49 CFR 173.xxx)	:	240
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	:	No limit
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	:	No limit
DOT Vessel Stowage Location	:	A - The material may be stowed ‘‘on deck’’ or ‘‘under deck’’ on a cargo vessel and on a passenger vessel.

Additional information

Other information : No supplementary information available.

ADR

No additional information available

Transport by sea

UN-No. (IMDG)	:	3077
Proper Shipping Name (IMDG)	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Class (IMDG)	:	9 - Miscellaneous dangerous compounds
Packing group (IMDG)	:	III - substances presenting low danger

Air transport

UN-No.(IATA)	:	3077
Proper Shipping Name (IATA)	:	Environmentally hazardous substance, solid, n.o.s.
Class (IATA)	:	9 - Miscellaneous Dangerous Goods
Packing group (IATA)	:	III - Minor Danger

SECTION 15: Regulatory information

15.1. US Federal regulations

Lead (7439-92-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on United States SARA Section 313 Not listed on the United States SARA Section 313	
RQ (Reportable quantity, section 304 of EPA's List of Lists)	10 lb

15.2. International regulations

CANADA

No additional information available

EU-Regulations

No additional information available

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Repr. 1A	H360Df
Acute Tox. 4 (Inhalation)	H332
Acute Tox. 4 (Oral)	H302
STOT RE 2	H373
Aquatic Acute 1	H400
Aquatic Chronic 1	H410

Full text of H-phrases: see section 16

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

Repr.Cat.1; R61
Repr.Cat.3; R62
Xn; R20/22
R33
N; R50/53

Full text of R-phrases: see section 16

15.2.2. National regulations

Lead (7439-92-1)
Listed on IARC (International Agency for Research on Cancer) Listed as carcinogen on NTP (National Toxicology Program)

15.3. US State regulations

No additional information available

SECTION 16: Other information

Revision date	:	12/15/2014

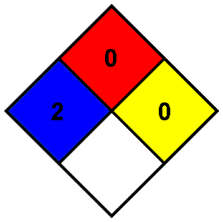
Full text of H-phrases:

Acute Tox. 4 (Inhalation)	Acute toxicity (inhalation) Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment - Chronic Hazard Category 1
Carc. 1B	Carcinogenicity Category 1B
Repr. 1A	Reproductive toxicity Category 1A
STOT RE 2	Specific target organ toxicity (repeated exposure) Category 2
H302	Harmful if swallowed
H332	Harmful if inhaled
H350	May cause cancer
H360	May damage fertility or the unborn child
H373	May cause damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects

NFPA health hazard : 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

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.



HMIS III Rating

Health : * Chronic Hazard - Chronic (long-term) health effects may result from repeated overexposure

Flammability : 0 Minimal Hazard

Physical : 0 Minimal Hazard

Personal Protection : B

SDS US (GHS HazCom 2012)

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

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: **AMPOL AUSTRALIA PETROLEUM PTY LTD**
ABN 17 000 032 128
29-33 Bourke Rd
Alexandria
New South Wales 2015 Australia

24 Hour Emergency Telephone	1800 033 111
Product Technical Information	1300364169
Supplier General Contact	+612 9250-5000
FAX	+612 9250-5742

SECTION 2 HAZARDS IDENTIFICATION

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. P260: Do not breathe mist / vapours. 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.

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.

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

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 - < 100%	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

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/m3			Australia WES
DISODIUM TETRABORATE PENTAHYDRATE	Inhalable fraction.	STEL	6 mg/m3			ACGIH
DISODIUM TETRABORATE PENTAHYDRATE	Inhalable fraction.	TWA	2 mg/m3			ACGIH
ETHYLENE GLYCOL	Vapour.	STEL	104 mg/m3	40 ppm	Skin	Australia WES
ETHYLENE GLYCOL	Particulate.	TWA	10 mg/m3		Skin	Australia WES
ETHYLENE GLYCOL	Vapour.	TWA	52 mg/m3	20 ppm	Skin	Australia WES
ETHYLENE GLYCOL	Aerosol, inhalable	STEL	10 mg/m3			ACGIH
ETHYLENE GLYCOL	Vapor fraction	STEL	50 ppm			ACGIH
ETHYLENE GLYCOL	Vapor fraction	TWA	25 ppm			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

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

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 40ºC]
Oxidizing Properties: See Hazards Identification Section.

OTHER INFORMATION

Freezing Point: N/D
Melting Point: N/D

SECTION 10 STABILITY AND REACTIVITY

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	
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.	Contains a substance that may cause damage to organs from prolonged or repeated exposure. Based on assessment of the components.

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

The information given is based on data for the material, components of the material, or for similar materials, through the application of bridging principals.

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

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

LAND (ADG) : Not Regulated for Land Transport

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

Marine Pollutant: No

AIR (IATA): Not Regulated for Air Transport

SECTION 15 REGULATORY INFORMATION

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: C2

REGULATORY STATUS AND APPLICABLE LAWS AND REGULATIONS

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

Special Cases:

Inventory	Status
AIIC	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:
Section 01: Company Mailing Address information was modified.
Section 08: Exposure Limits Table information was modified.

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

NEWTROL-C

AMINE STEAM LINE TREATMENT

DESCRIPTION:

Newtrol-C is a volatile amine that effectively neutralizes carbonic acid in condensate systems. Corrosion protection is achieved by adjustment of pH into the neutral to slightly alkaline zone. Buffering the pH prevents the carbonic acid from corroding the return piping and bringing the corrosion products back to the boiler.

APPLICATION AND DOSAGE:

Newtrol-C is best fed continuously to the boiler steam header or feed water tank when necessary. Sufficient Newtrol C should be used to maintain a pH of 8.4 - 9.4 in the condensate.

PRODUCT DATA:

FORM:	Liquid	FLASH POINT:	62 Degrees C
pH:	12.7	FREEZE POINT:	-14 Degrees C

SPECIFIC GRAVITY: 1.0 g/L

GOVERNMENT APPROVALS:

Newtrol c has received a Letter of No Objection from the Canadian Food Inspection Agency (CFIA) for use in food facilities, provided that it is used in keeping with the instructions outlined on the label. *CF/A designated W1 Approved.*

HANDLING:

Avoid contact with skin and eyes. Harmful if swallowed. Do not breathe vapors. If contacted, flush skin and/or eyes with large quantities of water. Get medical attention. Refer to Safety Data Sheets for specific instructions.

RED DEER (head office):

155 Queens Drive
Red Deer, AB, T4P 0R3

Local: 403-346-8787
Toll Free: 1-800-997-4899
Fax: 403-346-7779

PACIFIC DIVISON:

Unit 69, 1833 Coast Meridian Road, Port Coquitlam
BC, V3C 6G5

Local: 604-855-8797

CALGARY:

7212 Flint Pl SE
Calgary,
AB, T2H 1Y8

Local: 403-265-5055

NISKU:

1807, 5th Street
Nisku,
AB, T9E 7V7

Local: 780-955-7787

GRANDE PRAIRIE:

3416-109 Street
County of Grande Prairie No. 1
AB, T8W 5B5

Local: 780-933-8550

Safety Data Sheet

NON-Hazardous, NON-Dangerous Goods

1. MATERIAL AND SUPPLY COMPANY IDENTIFICATION

Product name: Nulon Premium Mineral 85W-140 Limited Slip Differential Oil

Synonyms	**Product Code**
1L	LSD85W140-1E
2.5L	LSD85W140-2.5
20L	LSD85W140-20

Recommended use: Automotive gear oil.

Supplier: Nulon Products Australia
Street Address: Head Office
49 McIntyre Road
Sunshine VIC 3020
Australia

Telephone: **+61 2 9608 7800 (Australia)**
+64 9 828 3255 (New Zealand)
Website: **www.nulon.com.au**
Email: **sds@nulon.com.au**

Emergency Telephone number: **Australia 1800 638 556 (24hr)**
New Zealand 0800 154 166 (24hr)

2. HAZARDS IDENTIFICATION

Based on available information, this material is not classified as hazardous according to criteria of Safe Work Australia GHS 7.

Signal Word
-

Hazard Classifications
Acute Hazard to the Aquatic Environment - Category 3
Chronic Hazard to the Aquatic Environment - Category 3

Hazard Statement
H412 Harmful to aquatic life with long lasting effects.

Prevention Precautionary Statement
P273 Avoid release to the environment.

Response Precautionary Statement
Not allocated

Storage Precautionary Statement
Not allocated

Disposal Precautionary Statement
P501 Dispose of contents/container in accordance with local, regional, national and international regulations.

Poison Schedule: Not Applicable

DANGEROUS GOOD CLASSIFICATION

Not classified as Dangerous Goods by the criteria of the "Australian Code for the Transport of Dangerous Goods by Road & Rail" and the "New Zealand NZS5433: Transport of Dangerous Goods on Land".

3. COMPOSITION INFORMATION

CHEMICAL ENTITY	CAS NO	PROPORTION
Base oil		>60 %
Long-chain alkyl amine		<1 %
Long-chain alkenyl amine		<1 %
Ingredients determined to be non-hazardous		Balance
		100%

4. FIRST AID MEASURES

If poisoning occurs, contact a doctor or Poisons Information Centre (Phone Australia 131 126, New Zealand 0800 764 766).

Inhalation: Remove victim from exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. Seek medical advice if effects persist.

Skin Contact: If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. If swelling, redness, blistering or irritation occurs seek medical assistance.

Eye contact: If in eyes wash out immediately with water. In all cases of eye contamination it is a sensible precaution to seek medical advice.

Ingestion: Rinse mouth with water. If swallowed, do NOT induce vomiting. Give a glass of water to drink. Never give anything by the mouth to an unconscious patient. If vomiting occurs give further water. Seek medical advice.

PPE for First Aiders: Wear safety shoes, overalls, gloves, safety glasses. Available information suggests that gloves made from nitrile rubber should be suitable for intermittent contact. However, due to variations in glove construction and local conditions, the user should make a final assessment. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

Notes to physician: Treat symptomatically.

5. FIRE FIGHTING MEASURES

Hazchem Code: Not applicable.

Suitable extinguishing media: If material is involved in a fire use water fog (or if unavailable fine water spray), alcohol resistant foam, standard foam, dry agent (carbon dioxide, dry chemical powder).

Specific hazards: Combustible material.

Fire fighting further advice: On burning or decomposing may emit toxic fumes. Fire fighters to wear self-contained breathing apparatus and suitable protective clothing if risk of exposure to vapour or products of

combustion or decomposition.

6. ACCIDENTAL RELEASE MEASURES

SMALL SPILLS
Wear protective equipment to prevent skin and eye contamination. Avoid inhalation of vapours or dust. Wipe up with absorbent (clean rag or paper towels). Collect and seal in properly labelled containers or drums for disposal.

LARGE SPILLS
Clear area of all unprotected personnel. Slippery when spilt. Avoid accidents, clean up immediately. Wear protective equipment to prevent skin and eye contamination and the inhalation of vapours. Work up wind or increase ventilation. Contain - prevent run off into drains and waterways. Use absorbent (soil, sand or other inert material). Collect and seal in properly labelled containers or drums for disposal. If contamination of crops, sewers or waterways has occurred advise local emergency services.

Dangerous Goods - Initial Emergency Response Guide No: Not applicable

7. HANDLING AND STORAGE

Handling: Avoid eye contact and repeated or prolonged skin contact. Avoid inhalation of vapour, mist or aerosols.

Storage: Store in a cool, dry, well-ventilated place and out of direct sunlight. Store away from foodstuffs. Store away from incompatible materials described in Section 10. Store away from sources of heat and/or ignition. Keep container standing upright. Keep containers closed when not in use - check regularly for leaks.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

National occupational exposure limits:

	TWA		STEL		NOTICES
	ppm	mg/m3	ppm	mg/m3	
Oil mist, refined mineral	-	5	-	-	-

As published by Safe Work Australia.

TWA - The time-weighted average airborne concentration over an eight-hour working day, for a five-day working week over an entire working life.

STEL (Short Term Exposure Limit) - the average airborne concentration over a 15 minute period which should not be exceeded at any time during a normal eight-hour workday.

These Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

If the directions for use on the product label are followed, exposure of individuals using the product should not exceed the above standard. The standard was created for workers who are routinely, potentially exposed during product manufacture.

Biological Limit Values: As per the "National Model Regulations for the Control of Workplace Hazardous Substances (Safe Work Australia)" the ingredients in this material do not have a Biological Limit Allocated.

Engineering Measures: Ensure ventilation is adequate to maintain air concentrations below Exposure

Standards. Use only in well ventilated areas. Use with local exhaust ventilation or while wearing appropriate respirator.

Personal Protection Equipment: SAFETY SHOES, OVERALLS, GLOVES, SAFETY GLASSES.

Personal protective equipment (PPE) must be suitable for the nature of the work and any hazard associated with the work as identified by the risk assessment conducted.

Wear safety shoes, overalls, gloves, safety glasses. Available information suggests that gloves made from nitrile rubber should be suitable for intermittent contact. However, due to variations in glove construction and local conditions, the user should make a final assessment. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

Hygiene measures: Keep away from food, drink and animal feeding stuffs. When using do not eat, drink or smoke. Wash hands prior to eating, drinking or smoking. Avoid contact with clothing. Avoid eye contact and repeated or prolonged skin contact. Avoid inhalation of vapour, mist or aerosols. Ensure that eyewash stations and safety showers are close to the workstation location.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	Liquid
Colour:	Amber
Odour:	Characteristic

Solubility in water:	Insoluble
Density:	0.90 g/cm3 @ 15°C (typical)
Relative Vapour Density (air=1):	N Av
Vapour Pressure (20 °C):	N Av
Flash Point (°C):	>200 (typical)
Flammability Limits (%):	N Av
Autoignition Temperature (°C):	378 (typical)
Pour Point/Range (°C):	N Av
Boiling Point/Range (°C):	>300 (typical)
pH:	N App
Viscosity:	430 mm2/s @ 40°C (typical)
Total VOC (g/Litre):	N Av

(Typical values only - consult specification sheet)
N Av = Not available, N App = Not applicable

10. STABILITY AND REACTIVITY

Chemical stability: This material is thermally stable when stored and used as directed.

Conditions to avoid: Elevated temperatures and sources of ignition.

Incompatible materials: Oxidising agents.

Hazardous decomposition products: Oxides of carbon and nitrogen, smoke and other toxic fumes.

Hazardous reactions: No known hazardous reactions.

11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms or effects that may arise if the product is mishandled and overexposure occurs are:

Acute Effects

Inhalation: Material may be an irritant to mucous membranes and respiratory tract.

Skin contact: Contact with skin may result in irritation.

Ingestion: Swallowing can result in nausea, vomiting and irritation of the gastrointestinal tract.

Eye contact: May be an eye irritant.

Acute toxicity

Inhalation: This material has been classified as not hazardous for acute inhalation exposure. Acute toxicity estimate (based on ingredients): LC_{50} > 20.0 mg/L for vapours or LC_{50} > 5.0 mg/L for dust and mist.

Skin contact: This material has been classified as not hazardous for acute dermal exposure. Acute toxicity estimate (based on ingredients): LD_{50} > 2,000 mg/Kg bw

Ingestion: This material has been classified as not hazardous for acute ingestion exposure. Acute toxicity estimate (based on ingredients): LD_{50} > 2,000 mg/Kg bw

Corrosion/Irritancy: Eye: this material has been classified as not corrosive or irritating to eyes. Skin: this material has been classified as not corrosive or irritating to skin.

Sensitisation: Inhalation: this material has been classified as not a respiratory sensitiser. Skin: this material has been classified as not a skin sensitiser.

Aspiration hazard: This material has been classified as not an aspiration hazard.

Specific target organ toxicity (single exposure): This material has been classified as not a specific hazard to target organs by a single exposure.

Chronic Toxicity

Mutagenicity: This material has been classified as not a mutagen.

Carcinogenicity: This material has been classified as not a carcinogen.

Reproductive toxicity (including via lactation): This material has been classified as not a reproductive toxicant.

Specific target organ toxicity (repeat exposure): This material has been classified as not a specific hazard to target organs by repeat exposure.

12. ECOLOGICAL INFORMATION

Avoid contaminating waterways.

Acute aquatic hazard: This material has been classified as a Category Acute 3 Hazard. Acute toxicity estimate (based on ingredients): > 10 ≤ 100 mg/L

Long-term aquatic hazard: This material has been classified as a Category Chronic 3 Hazard. Non-rapidly or rapidly degradable substance for which there are adequate chronic toxicity data available OR in the absence of chronic toxicity data, Acute toxicity estimate (based on ingredients): 10 - 100 mg/L, where the substance is not rapidly degradable and/or BCF ≥ 500 and/or log K_{ow} ≥ 4.

Ecotoxicity: No information available.

Persistence and degradability: No information available.

Bioaccumulative potential: No information available.

Mobility: No information available.

13. DISPOSAL CONSIDERATIONS

Persons conducting disposal, recycling or reclamation activities should ensure that appropriate personal protection equipment is used, see "Section 8. Exposure Controls and Personal Protection" of this SDS.

If possible material and its container should be recycled. If material or container cannot be recycled, dispose in accordance with local, regional, national and international Regulations.

14. TRANSPORT INFORMATION

ROAD AND RAIL TRANSPORT
Not classified as Dangerous Goods by the criteria of the "Australian Code for the Transport of Dangerous Goods by Road & Rail" and the "New Zealand NZS5433: Transport of Dangerous Goods on Land".

MARINE TRANSPORT
Not classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea.

AIR TRANSPORT
Not classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.

15. REGULATORY INFORMATION

This material/constituent(s) is covered by the following requirements:

The Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) established under the Therapeutic Goods Act (Commonwealth): Not Applicable.

AICIS Status: All components of this product are listed on or exempt from the Australian Inventory of Industrial Chemicals (AIIC).

16. OTHER INFORMATION

Reason for issue: Revised

This information was prepared in good faith from the best information available at the time of issue. It is based on the present level of research and to this extent we believe it is accurate. However, no guarantee of accuracy is made or implied and since conditions of use are beyond our control, all information relevant to usage is offered without warranty. The manufacturer will not be held responsible for any unauthorised use of this information or for any modified or altered versions.

If you are an employer it is your duty to tell your employees, and any others that may be affected, of any hazards described in this sheet and of any precautions that should be taken.

Safety Data Sheets are updated frequently. Please ensure you have a current copy.

SAFETY DATA SHEET

Oxygen

Airgas
an Air Liquide company

Section 1. Identification

GHS product identifier : Oxygen

Chemical name : oxygen

Other means of identification : Molecular oxygen; Oxygen molecule; Pure oxygen; O2; UN 1072; Dioxygen; Oxygen USP, Aviator's Breathing Oxygen (ABO)

Product type : Gas.

Product use : Synthetic/Analytical chemistry.

Synonym : Molecular oxygen; Oxygen molecule; Pure oxygen; O2; UN 1072; Dioxygen; Oxygen USP, Aviator's Breathing Oxygen (ABO)

SDS # : 001043

Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

24-hour telephone : 1-866-734-3438

Section 2. Hazards identification

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

Classification of the substance or mixture : OXIDIZING GASES - Category 1
GASES UNDER PRESSURE - Compressed gas

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : May cause or intensify fire; oxidizer.
Contains gas under pressure; may explode if heated.

Precautionary statements

General : Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Open valve slowly. Use only with equipment cleaned for Oxygen service.

Prevention : Keep away from clothing and other combustible materials. Keep reduction valves, valves and fittings free from oil and grease.

Response : In case of fire: Stop leak if safe to do so.

Storage : Protect from sunlight. Store in a well-ventilated place.

Disposal : Not applicable.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : oxygen

Other means of identification : Molecular oxygen; Oxygen molecule; Pure oxygen; O2; UN 1072; Dioxygen; Oxygen USP, Aviator's Breathing Oxygen (ABO)

Product code : 001043

CAS number/other identifiers

CAS number : 7782-44-7

Ingredient name	%	CAS number
oxygen	100	7782-44-7

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

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

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

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

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

Most important symptoms/effects, acute and delayed

Potential acute health effects

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

Inhalation : No known significant effects or critical hazards.

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

Frostbite : Try to warm up the frozen tissues and seek medical attention.

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

Over-exposure signs/symptoms

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

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

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

Specific treatments : No specific treatment.

Section 4. First aid measures

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.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

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

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Contains gas under pressure. Oxidizing material. This material increases the risk of fire and may aid combustion. Contact with combustible material may cause fire. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

Hazardous thermal decomposition products : No specific data.

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk.

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

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

Large spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Section 7. Handling and storage

Protective measures : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Avoid breathing gas. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Avoid contact with eyes, skin and clothing. Empty containers retain product residue and can be hazardous. Keep away from clothing, incompatible materials and combustible materials. Keep reduction valves free from grease and oil.

Advice on general occupational hygiene : 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. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F). Separate from reducing agents and combustible materials. Store away from grease and oil. Keep container tightly closed and sealed until ready for use. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
oxygen	None.

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

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.

Individual protection measures

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

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

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

Section 8. Exposure controls/personal protection

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. 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.

Section 9. Physical and chemical properties

Appearance

Physical state : Gas. [Compressed gas.]

Color : Colorless. Blue.

Odor : Odorless.

Odor threshold : Not available.

pH : Not available.

Melting point : -218.4°C (-361.1°F)

Boiling point : -183°C (-297.4°F)

Critical temperature : -118.15°C (-180.7°F)

Flash point : [Product does not sustain combustion.]

Evaporation rate : Not available.

Flammability (solid, gas) : Extremely flammable in the presence of the following materials or conditions: reducing materials, combustible materials and organic materials.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : 1.1 (Air = 1)

Specific Volume (ft^3/lb) : 12.0482

Gas Density (lb/ft^3) : 0.083

Relative density : Not applicable.

Solubility : Not available.

Solubility in water : Not available.

Partition coefficient: n-octanol/water : 0.65

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not applicable.

Flow time (ISO 2431) : Not available.

Molecular weight : 32 g/mole

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Hazardous reactions or instability may occur under certain conditions of storage or use.
Conditions may include the following:
contact with combustible materials
Reactions may include the following:
risk of causing fire

Section 10. Stability and reactivity

Conditions to avoid : No specific data.

Incompatible materials : Highly reactive or incompatible with the following materials:
combustible materials
reducing materials
grease
oil

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity
Not available.

Irritation/Corrosion
Not available.

Sensitization
Not available.

Mutagenicity
Not available.

Carcinogenicity
Not available.

Reproductive toxicity
Not available.

Teratogenicity
Not available.

Specific target organ toxicity (single exposure)
Not available.

Specific target organ toxicity (repeated exposure)
Not available.

Aspiration hazard
Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

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

Inhalation : No known significant effects or critical hazards.

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

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

Symptoms related to the physical, chemical and toxicological characteristics

Section 11. Toxicological information

Eye contact : No specific data.

Inhalation : No specific data.

Skin contact : No specific data.

Ingestion : No specific data.

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

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
oxygen	0.65	-	low

Mobility in soil

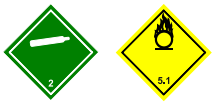
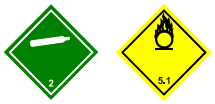
Soil/water partition coefficient (K_{OC}) : Not available.

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

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. 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. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1072	UN1072	UN1072	UN1072	UN1072
UN proper shipping name	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED	OXYGEN, COMPRESSED
Transport hazard class(es)	2.2 (5.1) 	2.2 	2.2 (5.1) 	2.2 (5.1) 	2.2 (5.1) 
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Additional information

DOT Classification : **Limited quantity** Yes.
Quantity limitation Passenger aircraft/rail: 75 kg. Cargo aircraft: 150 kg.
Special provisions A52

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2), 2.23-2.25 (Class 5).
Explosive Limit and Limited Quantity Index 0.125
ERAP Index 3000
Passenger Carrying Vessel Index 50
Passenger Carrying Road or Rail Index 75
Special provisions 42

IATA : **Quantity limitation** Passenger and Cargo Aircraft: 75 kg. Cargo Aircraft Only: 150 kg.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: This material is listed or exempted.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Refer to Section 2: Hazards Identification of this SDS for classification of substance.

State regulations

Massachusetts : This material is listed.

New York : This material is not listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

California Prop. 65

This product does not require a Safe Harbor warning under California Prop. 65.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia : This material is listed or exempted.

Canada : This material is listed or exempted.

China : This material is listed or exempted.

Europe : This material is listed or exempted.

Japan : **Japan inventory (ENCS)**: Not determined.
Japan inventory (ISHL): Not determined.

New Zealand : This material is listed or exempted.

Philippines : This material is listed or exempted.

Section 15. Regulatory information

Republic of Korea : This material is listed or exempted.

Taiwan : This material is listed or exempted.

Thailand : Not determined.

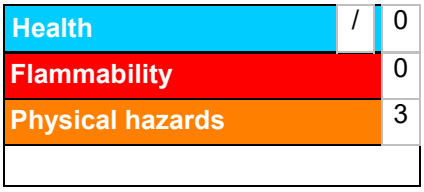
Turkey : Not determined.

United States : This material is active or exempted.

Viet Nam : This material is listed or exempted.

Section 16. Other information

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



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

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

Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
OXIDIZING GASES - Category 1 GASES UNDER PRESSURE - Compressed gas	Expert judgment According to package

History

Date of printing : 9/22/2020

Date of issue/Date of revision : 9/22/2020

Date of previous issue : 2/3/2018

Version : 1

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient

Section 16. Other information

MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References : Not available.

Notice to reader

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

SAFETY DATA SHEET

PETRO-CANADA ATF D3M

000003001076

Version 5.0 Revision Date 2022/06/22 Print Date 2022/06/22

SECTION 1. IDENTIFICATION

Product name : PETRO-CANADA ATF D3M

Synonyms : RDL 3887

Product code : ATFD3MCBLK, 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

Telephone : 1-905-403-6785

Emergency telephone number

Emergency telephone number : CHEMTREC: 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: +1 905-491-0565

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the Hazardous Products Regulations

Not a hazardous substance or mixture.

GHS label elements

Not a hazardous substance or mixture.

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.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
Lubricating oils (petroleum), C15-30,	72623-86-0	50 - 70

hydrotreated neutral oil-based; Baseoil — unspecified		
Lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based; Baseoil — unspecified	72623-87-1	20 - 30
Distillates (petroleum), hydrotreated light paraffinic; Baseoil — unspecified	64742-55-8	1 - 5
Distillates (petroleum), hydrotreated heavy paraffinic; Baseoil — unspecified	64742-54-7	1 - 5
Methacrylate copolymer		1 - 5
Ethanol, 2,2'-iminobis-, N-tallow alkyl derivs.	61791-44-4	0.1 - 1

Actual concentration or concentration range is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

If inhaled : Move to fresh air.
Artificial respiration and/or oxygen may be necessary.
Seek medical advice.

In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash skin thoroughly with soap and water or use recognized skin cleanser.
Wash clothing before reuse.
Seek medical advice.

In case of eye contact : Remove contact lenses.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Obtain medical attention.

If swallowed : Rinse mouth with water.
DO NOT induce vomiting unless directed to do so by a physician or poison control center.
Never give anything by mouth to an unconscious person.
Seek medical advice.

Most important symptoms and effects, both acute and delayed : First aider needs to protect himself.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : No information available.

Specific hazards during firefighting : Cool closed containers exposed to fire with water spray.

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. Mark the contaminated area with signs and prevent access to unauthorized personnel. Only qualified personnel equipped with suitable protective equipment may intervene.
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 protection against fire and explosion	:	None known.
Advice on safe handling	:	For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Use only with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin, eyes and clothing. Do not ingest. Keep away from heat and sources of ignition. Keep container closed when not in use.
Conditions for safe storage	:	Store in original container. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep in a dry, cool and well-ventilated place. Keep in properly labelled containers. To maintain product quality, do not store in heat or direct sunlight.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based; Baseoil — unspecified	72623-86-0	TWA (Mist)	5 mg/m3	CA AB OEL
		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 (Mist)	1 mg/m3	CA BC OEL
		TWA (Inhalable particulate matter)	5 mg/m3	ACGIH
Lubricating oils (petroleum), C20-50, hydrotreated neutral oil-based; Baseoil — unspecified	72623-87-1	TWA (Mist)	5 mg/m3	CA AB OEL
		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 (Mist)	1 mg/m3	CA BC OEL
		TWA (Inhalable particulate matter)	5 mg/m3	ACGIH
Distillates (petroleum), hydrotreated light paraffinic; Baseoil — unspecified	64742-55-8	TWA (Mist)	5 mg/m3	CA AB OEL
		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 (Mist)	1 mg/m3	CA BC OEL
		TWA (Inhalable particulate matter)	5 mg/m3	ACGIH
Distillates (petroleum), hydrotreated heavy paraffinic; Baseoil — unspecified	64742-54-7	TWA (Mist)	5 mg/m3	CA AB OEL
		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 (Mist)	1 mg/m3	CA BC OEL
		TWA (Inhalable particulate matter)	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®.
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	:	-54 °C (-65 °F)
Boiling point/boiling range	:	No data available
Flash point	:	195 °C (383 °F) Method: Cleveland open cup
Fire Point	:	213 °C (415 °F)

Evaporation rate	:	No data available
Flammability	:	Low fire hazard. This material must be heated before ignition will occur.
Auto-Ignition Temperature	:	No data available
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapour pressure	:	No data available
Relative vapour density	:	No data available
Relative density	:	No data available
Density	:	0.8502 kg/l (15 °C / 59 °F)
Solubility(ies)		
Water solubility	:	insoluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity		
Viscosity, kinematic	:	34.1 cSt (40 °C / 104 °F)
		7.4 cSt (100 °C / 212 °F)
Explosive properties	:	Do not pressurize, 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 and reducing agents.
Hazardous decomposition products	:	May release COx, NOx, SOx, 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	:	Assessment: The substance or mixture has no 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:

Lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based; Baseoil — unspecified:

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; Baseoil — unspecified:

Acute oral toxicity	:	LD50 (Rat): > 5,000 mg/kg,
Acute inhalation toxicity	:	LC50 (Rat): > 5.2 mg/l Exposure time: 4 h Test atmosphere: dust/mist
Acute dermal toxicity	:	LD50 (Rabbit): > 2,000 mg/kg,

Distillates (petroleum), hydrotreated heavy paraffinic; Baseoil — unspecified:

Acute oral toxicity	:	LD50 (Rat): > 5,000 mg/kg,
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/aquatic plants	:	Remarks: No data available
Toxicity to microorganisms	:	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

National Regulations

TDG
Not regulated as a dangerous good

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.
IECSC	:	On the inventory, or in compliance with the inventory

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
CA AB OEL	:	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
CA BC OEL	:	Canada. British Columbia OEL
CA QC OEL	:	Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants
ACGIH / TWA	:	8-hour, time-weighted average
CA AB OEL / TWA	:	8-hour Occupational exposure limit
CA AB OEL / STEL	:	15-minute occupational exposure limit
CA BC OEL / TWA	:	8-hour time weighted average
CA QC OEL / TWAEV	:	Time-weighted average exposure value
CA QC OEL / STEV	:	Short-term exposure value

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized

System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

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: 1 905-491-0565
Prepared by	:	Product Safety: +1 905-491-0565
Revision Date	:	2022/06/22
Date format	:	yyyy/mm/dd

The information is considered as correct, but not exhaustive, and will be used only as a guide, which is based in the current knowledge of the substance or mixture, and is applicable to proper safety precautions for the product.

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.

CA / EN

POLY-CIRC

BOILER WATER TREATMENT

DESCRIPTION:

Poly-Circ is a unique blend of organic and polymeric dispersants, and organic sequestrates. Poly-Circ primary function is to prevent deposition on heat transfer surfaces. However, if deposits are present, removal can take place depending on feed water quality.

APPLICATION AND DOSAGE:

Poly-Circ may be fed with other boiler treatment chemicals. It may be fed via a chemical injection pump to the storage section of a deaerator or hot well, or directly to the boiler. Dosage rate of Poly-Circ is fed on a one-to-one ratio with sulfite.

PRODUCT DATA:

pH:	10 – 12.5	FREEZE POINT:	0°C
Flash Point:	None	SPECIFIC GRAVITY:	1.17
COLOR:	Colorless	FORM:	Liquid

HANDLING:

Harmful if swallowed; do not induce vomiting. Avoid contact with skin, eyes, or clothing. If contacted, wash skin with water. If eyes are affected, flush with ample water and get medical attention. Refer to Safety Data Sheets for additional information.

RED DEER (head office):

155 Queens Drive
Red Deer, AB, T4P 0R3

Local: 403-346-8787
Toll Free: 1-800-997-4899
Fax: 403-346-7779

PACIFIC DIVISON:

Unit 69, 1833 Coast Meridian Road, Port Coquitlam
BC, V3C 6G5

Local: 604-855-8797

CALGARY:

7212 Flint Pl SE
Calgary,
AB, T2H 1Y8

Local: 403-265-5055

NISKU:

1807, 5th Street
Nisku,
AB, T9E 7V7

Local: 780-955-7787

GRANDE PRAIRIE:

3416-109 Street
County of Grande Prairie No. 1
AB, T8W 5B5

Local: 780-933-8550

Safety Data Sheet

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Havoline Power Steering Fluid

Product Use: Power Steering Fluid
Product Number(s): 221806
Company Identification
Chevron Products Company
a division of Chevron U.S.A. Inc.
6001 Bollinger Canyon Rd.
San Ramon, CA 94583
United States of America
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: 1 (800) 582-3835, LUBETEK@chevron.com

SECTION 2 HAZARDS IDENTIFICATION

CLASSIFICATION: Acute aquatic toxicant: Category 2. Chronic aquatic toxicant: Category 2.

Environmental Hazards: Toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS:
Prevention: Avoid release to the environment.
Response: Collect spillage.
Disposal: Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

HAZARDS NOT OTHERWISE CLASSIFIED: Not Applicable

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT

Highly refined mineral oil (C15 - C50)	Mixture	70 - 99 %weight

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: High-Pressure Equipment Information: Accidental high-velocity injection under the skin of materials of this type may result in serious injury. Seek medical attention at once should an accident like this occur. The initial wound at the injection site may not appear to be serious at first; but, if left untreated, could result in disfigurement or amputation of the affected part.
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.

DELAYED OR OTHER HEALTH EFFECTS: Not classified

Indication of any immediate medical attention and special treatment needed
Note to Physicians: In an accident involving high-pressure equipment, this product may be injected under the skin. Such an accident may result in a small, sometimes bloodless, puncture wound. However, because of its driving force, material injected into a fingertip can be deposited into the palm of the hand. Within 24 hours, there is usually a great deal of swelling, discoloration, and intense throbbing pain. Immediate treatment at a surgical emergency center is recommended.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.
Unusual Fire Hazards: Leaks/ruptures in high pressure system using materials of this type can create a fire hazard when in the vicinity of ignition sources (eg. open flame, pilot lights, sparks, or electric arcs).

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 and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 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: DO NOT USE IN HIGH PRESSURE SYSTEMS in the vicinity of flames, sparks and hot surfaces. Use only in well ventilated areas. Keep container closed.
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: 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	Agency	Form	TWA	STEL	Ceiling	Notation
Highly refined mineral oil (C15 - C50)	ACGIH	--	5 mg/m3	10 mg/m3	--	--
Highly refined mineral oil (C15 - C50)	OSHA Z-1	--	5 mg/m3	--	--	--

Consult local authorities for appropriate values.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

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

Color: Red
Physical State: Liquid
Odor: Petroleum odor
Odor Threshold: No data available
pH: Not Applicable
Vapor Pressure: No data available
Vapor Density (Air = 1): No data available
Initial Boiling Point: No data available
Solubility: Soluble in hydrocarbons; insoluble in water
Freezing Point: Not Applicable
Melting Point: No data available
Density: 0.8677 kg/l - 0.868 kg/l @ 15°C (59°F) (Typical)
Viscosity: 39.27 mm2/s - 41 mm2/s @ 40°C (104°F) (Typical)
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): Not Applicable

Flashpoint: 175 °C (347 °F) (Minimum)
Autoignition: No data available
Flammability (Explosive) Limits (% by volume in air): Lower: No data available Upper: No data available

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.

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:
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 expected to be toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment.
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 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. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by international, country, or local laws and regulations.

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.

DOT Shipping Description: NOT REGULATED FOR TRANSPORT UNDER 49 CFR; OR OPTIONAL DISCLOSURE: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (3-(DECYCLOXY)TETRAHYDROTHIOPHENE-1,1,-DIOXIDE, ALKYL PHOSPHITES), 9, III, MARINE POLLUTANT (3-(DECYCLOXY)TETRAHYDROTHIOPHENE-1,1,-DIOXIDE, ALKYL PHOSPHITES)

IMO/IMDG Shipping Description: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (3-(DECYCLOXY)TETRAHYDROTHIOPHENE-1,1,-DIOXIDE, ALKYL PHOSPHITES), 9, III, MARINE POLLUTANT (3-(DECYCLOXY)TETRAHYDROTHIOPHENE-1,1,-DIOXIDE, ALKYL PHOSPHITES); PACKAGES CONTAINING LESS THAN 5 LITERS IN ONE PACKAGING MAY BE EXEMPT FROM REGULATION.

ICAO/IATA Shipping Description: UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (3-(DECYCLOXY)TETRAHYDROTHIOPHENE-1,1,-DIOXIDE, ALKYL PHOSPHITES), 9, III; PACKAGES CONTAINING LESS THAN 5 LITERS IN ONE PACKAGING MAY BE EXEMPT FROM REGULATION.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code:
Not applicable

SECTION 15 REGULATORY INFORMATION

EPCRA 311/312 CATEGORIES: Not applicable

REGULATORY LISTS SEARCHED:

01-1=IARC Group 1	05=MA RTK
01-2A=IARC Group 2A	06=NJ RTK
01-2B=IARC Group 2B	07=PA RTK
02=NTP Carcinogen	08-1=TSCA 5(e)
03=EPCRA 313	08-2=TSCA 12(b)
04=CA Proposition 65	

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

CHEMICAL INVENTORIES:
All components comply with the following chemical inventory requirements: AIIC (Australia), DSL

(Canada), ENCS (Japan), IECSC (China), KECI (Korea), PICCS (Philippines), TSCA (United States).

One or more components is listed on ELINCS (European Union). All other components are listed or exempted from listing on EINECS.

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 0 Flammability: 1 Reactivity: 0

HMIS RATINGS: Health: 0 Flammability: 1 Reactivity: 0
(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

REVISION STATEMENT: SECTION 02 - Environmental Classification information was added.
SECTION 02 - Environmental Classification information was deleted.
SECTION 02 - Hazard Statements information was added.
SECTION 02 - Hazard Statements information was deleted.
SECTION 02 - Pictogram information was added.
SECTION 02 - Pictogram information was deleted.
SECTION 02 - Precautionary Statements information was added.
SECTION 02 - Precautionary Statements information was deleted.
SECTION 09 - Physical/Chemical Properties information was modified.
SECTION 15 - Chemical Inventories information was modified.

Revision Date: April 07, 2021

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	

Prepared according to the 29 CFR 1910.1200 (2012) by Chevron Energy Technology Company, 6001 Bollinger Canyon Road, San Ramon, CA 94583.

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

Propane

Section 1. Identification

GHS product identifier : Propane

Chemical name : propane

Other means of identification : Propyl hydride; n-Propane; Dimethyl methane; Bottled gas; propane in gaseous state; propane liquefied, n-Propane; Dimethylmethane; Freon 290; Liquefied petroleum gas; Lpg; Propyl hydride; R 290; C3H8; UN 1075; UN 1978; A-108; Hydrocarbon propellant.

Product type : Liquefied gas

Product use : Synthetic/Analytical chemistry.

Synonym : Propyl hydride; n-Propane; Dimethyl methane; Bottled gas; propane in gaseous state; propane liquefied, n-Propane; Dimethylmethane; Freon 290; Liquefied petroleum gas; Lpg; Propyl hydride; R 290; C3H8; UN 1075; UN 1978; A-108; Hydrocarbon propellant.

SDS # : 001045

Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

24-hour telephone : 1-866-734-3438

Section 2. Hazards identification

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

Classification of the substance or mixture : FLAMMABLE GASES - Category 1
GASES UNDER PRESSURE - Liquefied gas

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Extremely flammable gas.
Contains gas under pressure; may explode if heated.
May cause frostbite.
May displace oxygen and cause rapid suffocation.
May form explosive mixtures with air.

Precautionary statements

General : Read and follow all Safety Data Sheets (SDS'S) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction. Always keep container in upright position. Approach suspected leak area with caution.

Prevention : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Response : Leaking gas fire: Do not extinguish, unless leak can be stopped safely. In case of leakage, eliminate all ignition sources.

Storage : Protect from sunlight. Store in a well-ventilated place.

Section 2. Hazards identification

Disposal : Not applicable.

Hazards not otherwise classified : Liquid can cause burns similar to frostbite.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : propane

Other means of identification : Propyl hydride; n-Propane; Dimethyl methane; Bottled gas; propane in gaseous state; propane liquefied, n-Propane; Dimethylmethane; Freon 290; Liquefied petroleum gas; Lpg; Propyl hydride; R 290; C3H8; UN 1075; UN 1978; A-108; Hydrocarbon propellant.

Product code : 001045

CAS number/other identifiers

CAS number : 74-98-6

Ingredient name	%	CAS number
Propane	100	74-98-6

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

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

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

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Wash contaminated skin with soap and water. Remove contaminated clothing and shoes. To avoid the risk of static discharges and gas ignition, soak contaminated clothing thoroughly with water before removing it. Get medical attention if symptoms occur. In case of contact with liquid, warm frozen tissues slowly with lukewarm water and get medical attention. Do not rub affected area. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if adverse health effects persist or are severe. Ingestion of liquid can cause burns similar to frostbite. If frostbite occurs, get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. As this product rapidly becomes a gas when released, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Liquid can cause burns similar to frostbite.

Inhalation : No known significant effects or critical hazards.

Skin contact : Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.

Section 4. First aid measures

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Ingestion : Ingestion of liquid can cause burns similar to frostbite.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:, frostbite

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:, frostbite

Ingestion : Adverse symptoms may include the following:, frostbite

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

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

Specific treatments : No specific treatment.

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.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

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

Unsuitable extinguishing media : None known.

Specific hazards arising from the chemical : Contains gas under pressure. Extremely flammable gas. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Gas may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back, causing fire or explosion.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and allow fire to burn. Fight fire from protected location or maximum possible distance. Eliminate all ignition sources if safe to do so.

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. For incidents involving large quantities, thermally insulated undergarments and thick textile or leather gloves should be worn.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Accidental releases pose a serious fire or explosion hazard. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Section 6. Accidental release measures

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment.

Large spill : Immediately contact emergency personnel. Stop leak if without risk. Use spark-proof tools and explosion-proof equipment. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Do not get in eyes or on skin or clothing. Avoid breathing gas. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Use only non-sparking tools. Empty containers retain product residue and can be hazardous. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment.

Advice on general occupational hygiene : 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. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Eliminate all ignition sources. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F). Keep container tightly closed and sealed until ready for use. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Propane	**NIOSH REL (United States, 10/2016).** TWA: 1800 mg/m³ 10 hours. TWA: 1000 ppm 10 hours. **OSHA PEL (United States, 5/2018).** TWA: 1800 mg/m³ 8 hours. TWA: 1000 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989).** TWA: 1800 mg/m³ 8 hours. TWA: 1000 ppm 8 hours. **ACGIH TLV (United States, 3/2019). Oxygen Depletion [Asphyxiant]. Explosive potential.**

Section 8. Exposure controls/personal protection

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

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.

Individual protection measures

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

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection : 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. If contact with the liquid is possible, insulated gloves suitable for low temperatures should be worn. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : 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. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Thermal hazards : If there is a risk of contact with the liquid, all protective equipment worn should be suitable for use with extremely low temperature materials.

Section 9. Physical and chemical properties

Appearance

Physical state : Gas.

Color : Colorless.

Odor : Odorless.BUT MAY HAVE SKUNK ODOR ADDED.

Odor threshold : Not available.

pH : Not available.

Melting point : -187.6°C (-305.7°F)

Boiling point : -42.1°C (-43.8°F)

Section 9. Physical and chemical properties

Critical temperature : 96.55°C (205.8°F)

Flash point : Closed cup: -104°C (-155.2°F)
Open cup: -104°C (-155.2°F)

Evaporation rate : Not available.

Flammability (solid, gas) : Extremely flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and oxidizing materials.

Lower and upper explosive (flammable) limits : Lower: 1.8%
Upper: 8.4%

Vapor pressure : 109 (psig)

Vapor density : 1.6 (Air = 1)

Specific Volume (ft ^{3}/lb) : 8.6206

Gas Density (lb/ft ^{3}) : 0.116 (25°C / 77 to °F)

Relative density : Not applicable.

Solubility : Not available.

Solubility in water : 0.0244 g/l

Partition coefficient: n-octanol/water : 1.09

Auto-ignition temperature : 287°C (548.6°F)

Decomposition temperature : Not available.

Viscosity : Not applicable.

Flow time (ISO 2431) : Not available.

Molecular weight : 44.11 g/mole

Aerosol product

Heat of combustion : -46012932 J/kg

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow gas to accumulate in low or confined areas.

Incompatible materials : Oxidizers

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Not available.

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Liquid can cause burns similar to frostbite.

Inhalation : No known significant effects or critical hazards.

Skin contact : Dermal contact with rapidly evaporating liquid could result in freezing of the tissues or frostbite.

Ingestion : Ingestion of liquid can cause burns similar to frostbite.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:, frostbite

Inhalation : No specific data.

Skin contact : Adverse symptoms may include the following:, frostbite

Ingestion : Adverse symptoms may include the following:, frostbite

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

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Section 11. Toxicological information

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Propane	1.09	-	low

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

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

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. 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. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1978	UN1978	UN1978	UN1978	UN1978
UN proper shipping name	PROPANE SEE ALSO PETROLEUM GASES, LIQUEFIED	PROPANE	PROPANE SEE ALSO PETROLEUM GASES, LIQUEFIED (propane)	PROPANE	PROPANE
Transport hazard class(es)	2.1 	2.1 	2.1 	2.1 	2.1 
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Additional information

DOT Classification : **Limited quantity**
Yes.

Packaging instruction
Passenger aircraft
Quantity limitation: Forbidden.

Cargo aircraft
Quantity limitation: 150 kg

Special provisions
19, T50

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)]

TDG Classification : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2).
Explosive Limit and Limited Quantity Index 0.125
ERAP Index 3000
Passenger Carrying Vessel Index 65
Passenger Carrying Road or Rail Index Forbidden
Special provisions 29, 42

IATA : **Quantity limitation** Passenger and Cargo Aircraft: Forbidden. Cargo Aircraft Only: 150 kg.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 14. Transport information

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

Clean Air Act (CAA) 112 regulated flammable substances: propane

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Refer to Section 2: Hazards Identification of this SDS for classification of substance.

State regulations

Massachusetts : This material is listed.

New York : This material is not listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

California Prop. 65

This product does not require a Safe Harbor warning under California Prop. 65.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia : This material is listed or exempted.

Canada : This material is listed or exempted.

China : This material is listed or exempted.

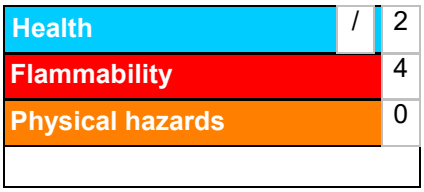
Europe : This material is listed or exempted.

Section 15. Regulatory information

Japan	:	**Japan inventory (ENCS)**: This material is listed or exempted. **Japan inventory (ISHL)**: This material is listed or exempted.
New Zealand	:	This material is listed or exempted.
Philippines	:	This material is listed or exempted.
Republic of Korea	:	This material is listed or exempted.
Taiwan	:	This material is listed or exempted.
Thailand	:	Not determined.
Turkey	:	This material is listed or exempted.
United States	:	This material is active or exempted.
Viet Nam	:	This material is listed or exempted.

Section 16. Other information

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



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

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

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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
FLAMMABLE GASES - Category 1 GASES UNDER PRESSURE - Liquefied gas	Expert judgment Expert judgment

History

Date of printing	:	11/15/2020
Date of issue/Date of revision	:	11/15/2020
Date of previous issue	:	10/5/2020
Version	:	1.02

Section 16. Other information

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

References : Not available.

Other special considerations : The information below is given to call attention to the issue of “Naturally occurring radioactive materials”. Although Radon-222 levels in the product represented by this MSDS do not present any direct Radon exposure hazard, customers should be aware of the potential for Radon daughter build up within their processing systems, whatever the source of their product streams. Radon-222 is a naturally occurring radioactive gas which can be a contaminant in natural gas. During subsequent processing , Radon tends to be concentrated in Liquefied Petroleum Gas streams and in product streams having a similar boiling point range. Industry experience has shown that this product may contain small amounts of Radon-222 and its radioactive decay products, called Radon “daughters”. The actual concentration of Radon-222 and radioactive daughters in the delivered product is dependent on the geographical source of the natural gas and storage time prior to delivery. Process equipment (i.e. lines, filters, pumps and reaction units) may accumulate significant levels of radioactive daughters and show a gamma radiation reading during operation. A potential external radiation hazard exists at or near any pipe valve or vessel containing a Radon enriched stream, or containing internal deposits of radioactive material due to the transmission of gamma radiation through its wall. Field studies reported in the literature have not shown any conditions that subject workers to cumulative exposures in excess of general population limits. Equipment emitting gamma radiation should be presumed to be internally contaminated with alpha emitting decay products which may be a hazard if inhaled or ingested. Protective equipment such as coveralls, gloves, and respirator (NIOSH/MHSA approved for high efficiency particulates and radionuclides, or supplied air) should be worn by personnel entering a vessel or working on contaminated process equipment to prevent skin contamination, ingestion, or inhalation of any residues containing alpha radiation. Airborne contamination may be minimized by handling scale and/or contaminated materials in a wet state.

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.

Sodium Bisulfite

SECTION 1 : Identification of the substance/mixture and of the supplier

Product name : **Sodium Bisulfite**

Manufacturer/Supplier Trade name:

Manufacturer/Supplier Article number: **S25536**

Recommended uses of the product and uses restrictions on use:

Manufacturer Details:

AquaPhoenix Scientific
9 Barnhart Drive, Hanover, PA 17331

Supplier Details:

Fisher Science Education
15 Jet View Drive, Rochester, NY 14624

Emergency telephone number:

Fisher Science Education Emergency Telephone No.: 800-535-5053

SECTION 2 : Hazards identification

Classification of the substance or mixture:

Irritant
Acute toxicity (oral, dermal, inhalation), category 4

AcTox. Oral 4

Signal word :Warning

Hazard statements:
Harmful if swallowed
Precautionary statements:
If medical advice is needed, have product container or label at hand
Keep out of reach of children
Read label before use
Wash skin thoroughly after handling
Do not eat, drink or smoke when using this product
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth
Dispose of contents and container as instructed in Section 13

Other Non-GHS Classification:

WHMIS

D2B

NFPA/HMIS

NFPA SCALE (0-4)

Health	2
Flammability	0
Physical Hazard	1
Personal Protection	X

HMIS RATINGS (0-4)

SECTION 3 : Composition/information on ingredients

Ingredients:		
CAS 7631-90-5	Sodium bisulfite	>90 %
		Percentages are by weight

SECTION 4 : First aid measures

Description of first aid measures

After inhalation: Move exposed to fresh air. Give artificial respiration if necessary. If breathing is difficult give oxygen.Loosen clothing and place exposed in a comfortable position.

After skin contact: Wash hands and exposed skin with soap and plenty of water. Seek medical attention if irritation persists or if concerned.

After eye contact: Immediately seek medical attention.Continue rinsing eyes during transport to hospital.Protect unexposed eye.Flush exposed eye gently using water for 15-20 minutes. Remove contact lenses while rinsing.

After swallowing: Immediately seek medical attention.Rinse mouth with water.Do not induce vomiting. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed:

Shortness of breath.Headache.Nausea.Dizziness. Sulfite compounds may cause a severe allergic reaction in sensitive individuals and some asthmatics. Irritation- all routes of exposure;Repeated or prolonged exposure may cause allergic reactions in sensitive individuals

Indication of any immediate medical attention and special treatment needed:

Upper Respiratory Tract irritation Eye irritation Skin irritation Not classifiable as a human carcinogen. If seeking medical attention provide SDS document to physician. Physician should treat symptomatically.

SECTION 5 : Firefighting measures

Extinguishing media

Suitable extinguishing agents: Use water, dry chemical, chemical foam, carbon dioxide, or alcohol-resistant foam.Substance is noncombustible; use agent most appropriate to extinguish surrounding fire

For safety reasons unsuitable extinguishing agents:

Special hazards arising from the substance or mixture:

Combustible dust formation is a risk.Reacts with most metals in presence of moisture to liberate extremely flammable hydrogen gas. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Substance is noncombustible

Advice for firefighters:

Protective equipment: Wear protective eyeware, gloves, and clothing. Refer to Section 8.

Additional information (precautions): Wear respiratory protection. Avoid dust generation.Avoid inhaling gases, fumes, dust, mist, vapor, and aerosols. Avoid contact with skin, eyes, and clothing.

SECTION 6 : Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Ensure adequate ventilation.Ensure that air-handling systems are operational.

Environmental precautions:

Should not be released into environment.Prevent from reaching drains, sewer, or waterway.

Methods and material for containment and cleaning up:

Pick up and arrange disposal without creating dust. Sweep up and shovel. Wear protective eyeware, gloves, and clothing. Refer to Section 8.Always obey local regulations.If necessary use trained response staff or contractor. Evacuate personnel to safe areas. Containerize for disposal. Refer to Section 13.Keep in suitable closed containers for disposal.

Reference to other sections:

SECTION 7 : Handling and storage

Precautions for safe handling:

Avoid dust generation.Combustible dust formation is a risk.Avoid contact with skin, eyes, and clothing.Follow good hygiene procedures when handling chemical materials. Refer to Section 8.Follow proper disposal methods. Refer to Section 13.Do not eat, drink, smoke, or use personal products when handling chemical substances.

Conditions for safe storage, including any incompatibilities:

Never allow product to get in contact with water during storage. Do not store near acids. Store in a cool location.Keep away from food and beverages.Protect from freezing and physical damage.Provide ventilation for containers. Keep container tightly sealed. Store away from incompatible materials.

SECTION 8 : Exposure controls/personal protection

Control Parameters:	7681-57-4, Sodium metabisulphite, STEL 5.000000 mg/m3 USA. ACGIH 7681-57-4, Sodium metabisulphite, TWA 5.000000 mg/m3 USA. NIOSH 7631-90-5, Sodium bisulfite, ACGIH TLV: 5 mg/m3 TWA 7631-90-5, Sodium bisulfite, NIOSH REL: 5 mg/m3 TWA
Appropriate Engineering controls:	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor and mists below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above.
Respiratory protection:	Not required under normal conditions of use. Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls.When necessary use NIOSH approved breathing equipment.

Protection of skin: Select glove material impermeable and resistant to the substance.Select glove material based on rates of diffusion and degradation. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices.Use proper glove removal technique without touching outer surface. Avoid skin contact with used gloves.Wear protective clothing.

Eye protection: Face shield and safety glasses are appropriate eye protection. Wear equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).Safety glasses or goggles are appropriate eye protection.

General hygienic measures: Perform routine housekeeping.Wash hands before breaks and immediately after handling the product.Avoid contact with skin, eyes, and clothing.Before rewearing wash contaminated clothing.

SECTION 9 : Physical and chemical properties

Appearance (physical state,color):	White powder	**Explosion limit lower**: **Explosion limit upper**:	Not Determined Not Determined
Odor:	Sulfurous odor	**Vapor pressure**:	Not Determined
Odor threshold:	Not Determined	**Vapor density**:	Not Determined
pH-value:	4 - 5 (25% aq. sol.)	**Relative density**:	Not Determined
Melting/Freezing point:	150°C	**Solubilities**:	Soluble in water: Completely
Boiling point/Boiling range:	Not Determined	**Partition coefficient (n-octanol/water)**:	Not Determined
Flash point (closed cup):	Not Determined	**Auto/Self-ignition temperature**:	Not Determined
Evaporation rate:	Not Determined	**Decomposition temperature**:	Not Determined
Flammability (solid,gaseous):	Not Determined	**Viscosity**:	a. Kinematic:Not Determined b. Dynamic: Not Determined
Density: Not Determined **Specific Gravity:**1.480			

SECTION 10 : Stability and reactivity

Reactivity: Oxidizes when exposed to air. Contact with acid liberates gas. Moisture sensitive
Chemical stability: Oxidizes when exposed to air. Contact with acid liberates gas. Moisture sensitive.
Possible hazardous reactions: Reacts with most metals in presence of moisture to liberate extremely flammable hydrogen gas
Conditions to avoid: Incompatible materials.Dust generation.Exposure to moisture.Temperatures above 150°C.
Incompatible materials: Strong oxidizing agents, Strong acids. Aluminum
Hazardous decomposition products: Sulphur oxides, Sodium oxides

SECTION 11 : Toxicological information

Acute Toxicity:

Sodium Bisulfite

Oral:	7631-90-5	LD50 oral-rat: 2 gm/kg
Chronic Toxicity: No additional information.		
Corrosion Irritation: No additional information.		
Sensitization:		No additional information.
Single Target Organ (STOT):		No additional information.
Numerical Measures:		No additional information.
Carcinogenicity:		No additional information.
Mutagenicity:		No additional information.
Reproductive Toxicity:		No additional information.

SECTION 12 : Ecological information

Ecotoxicity Persistence and degradability: No information available.
Bioaccumulative potential: No information available.
Mobility in soil: No information available.
Other adverse effects: No information available.

SECTION 13 : Disposal considerations

Waste disposal recommendations:

Contact a licensed professional waste disposal service to dispose of this material.Dispose of empty containers as unused product.Product or containers must not be disposed together with household garbage. It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11). Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations. Ensure complete and accurate classification.

SECTION 14 : Transport information

UN-Number

3260

UN proper shipping name

CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S (SODIUM BISULFITE)

Transport hazard class(es)

Class:
8 Corrosive substances

Packing group:III
Environmental hazard:
Transport in bulk:
Special precautions for user:

SECTION 15 : Regulatory information

United States (USA)

SARA Section 311/312 (Specific toxic chemical listings):

None of the ingredients is listed

SARA Section 313 (Specific toxic chemical listings):

None of the ingredients is listed

RCRA (hazardous waste code):

None of the ingredients is listed

TSCA (Toxic Substances Control Act):

All ingredients are listed.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):

7631-90-5 Sodium bisulfite 5000 lbs.

Proposition 65 (California):

Chemicals known to cause cancer:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed

Chemicals known to cause developmental toxicity:

None of the ingredients is listed

Canada

Canadian Domestic Substances List (DSL):

All ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 0.1%):

None of the ingredients is listed

Canadian NPRI Ingredient Disclosure list (limit 1%):

7631-90-5 Sodium bisulfite

SECTION 16 : Other information

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations. 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 applicable to this material.

GHS Full Text Phrases:

Abbreviations and acronyms:

Effective date : 02.11.2015
Last updated : 03.19.2015

cyanco
Your Mining Solution

SAFETY DATA SHEET

CYANCO® SODIUM CYANIDE, BRICKS 98% ± 1%

Doc. No.	COR-UNI-EHSS-SDS-002	Revision Date:	4/12/2018
Version	4.0 US	Print Date:	4/12/2018

This SDS adheres to the standards and regulatory requirements of the United States and Canada and may not meet the regulatory requirements of other countries.

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

GHS Product Identifier	:	Sodium Cyanide, Solid UN 1689
Tradename/Synonym	:	CYANCO® SODIUM CYANIDE, BRICKS 98% ± 1%
Product Use	:	For Industrial Use
Function	:	Electroplating Agent Gold and silver extraction in mining operations
Company	:	Cyanco 1920 Country Place Parkway Suite 400 Pearland, Texas 77584 USA
Medical Emergency		
US: Poison Control Center	:	800.222.1222
Transport Emergency		
US: CHEMTREC	:	800.424.9300 Customer Number: CCN6043
Canada: CANUTEC	:	613.996.6666
Product Information	:	832.590.3644
Telefax	:	713.436.5202
Contact Person	:	SDS Coordinator, 832.590.3644

SECTION 2. HAZARDS IDENTIFICATION

Danger Classification:

Acute Toxicity – Oral – Category 2

Acute Toxicity – Dermal – Category 1

Acute Toxicity – inhalation – Category 1
Releases toxic gas upon contact with strong oxidizers: hydrogen cyanide

Skin corrosion/irritation – Category 1
Strong base: pH of solution - 12.0

Serious eye damage/eye irritation – Category 1
Strong base: pH of solution – 12.0

Health hazards not otherwise classified (corrosion) – Category 1

DANGER!

Hazard Statement

Fatal if swallowed (H300)

Fatal in contact with skin (H310)

On contact with strong oxidizers (acids) releases gases which are fatal if inhaled: hydrogen cyanide

Causes severe skin burns and eye damage (H314)

Causes sever damage to the respiratory tract

Other Hazards	Very toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment. Under the action of acids (as well as carbon dioxide) hydrocyanic acid is released which is combustible and may react with air to form explosive gas mixtures.

Precautions

Prevention

Wash hands thoroughly after handling.

Do not eat, drink or smoke when handling this product.

Avoid contact with eyes, skin or clothing.

Wear protective gloves / protective clothing / eye protection / face protection.

Do not breathe vapors.

First Aid

Contact a poison control center / doctor immediately!

TIME IS CRITICAL – IMMEDIATE TREATMENT IS ESSENTIAL.

IF INGESTED: If patient is conscious immediately rinse mouth out with w Significant changes to information from the previous version are noted with a bar in the left hand margin.

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.

ater. DO NOT induce vomiting. DO NOT give an unconscious person anyting by mouth.

IF ON SKIN (or hair): Immediately remove all contaminated clothing. Wash with plenty of water for at least 15 minutes.

IF INHALED: Remove patient to fresh air and keep in a position comfortable for breathing.

IF IN EYES: Remove contact lenses, if worn. Rinse immediately with water for at least 15 minutes.

Specific treatment for patient:

Fully Conscious – Give 100% medical oxygen until medical help arrives

Unconscious / not fully conscious – Give 100% medical oxygen until medical help arrives

Not Breathing – Perform CPR using CAB protocol until the patient has adequate breathing or until medical help arrives.

Properly dispose of contaminated clothing.

In Case of Spill

Collect mechanically and put in a suitable container for disposal. Use supplied breathing air, chemical splash goggles, nitrile gloves, chemical protective suit, rubber boots and other protective equipment as needed.

In Case of Fire

Use dry powder extinguisher. DO NOT use CO_2 or acidic quenching agents. If water is used, the water must be contained and disposed of in accordance with local regulations.

Storage

Keep product containers closed and sealed at all times,

Store under lock and key or in a way that only qualified persons have access to it.

Do not store together with acid and acidic salts.

Disposal

Empty containers must be handled with care due to product residue.

Waste must be disposed of in accordance with local, state, provincial and federal laws and regulations.

SECTION 3. COMPOSITION / INFORMATION ON INGREDIENTS

Information on Ingredients / Hazardous Components

Sodium Cyanide	CAS No.	143-33-9	Percent (Wt. / Wt.) 97 – 99%
	EC No.	205-599-4	

Other Information : This material is classified as hazardous under OSHA regulations.

SECTION 4. FIRST AID MEASURES

General Advice

WARNING!	If exposed to sodium cyanide, seek qualified medical attention immediately! Rescuers or medical responders should first of all protect themselves from exposure! Decontaminate the victim to prevent further absorption and exposure to rescuers and monitor vital signs.

Skin Contact	• No cases of cyanide intoxication have been observed to date following contact with dry sodium cyanide on dry skin free of injuries. However, if the dry sodium cyanide comes in contact with moisture or acids, then hydrogen cyanide may be released, causing cyanide intoxication. • May cause caustic burns to skin upon contact due to high pH. • Wash off immediately using large amounts of water (and soap if available) while removing all contaminated clothes and shoes. • Immediately contact or summon an emergency physician in case of intoxication symptoms.
Eye Contact	• In case of contact with the eyes, immediately flush eyes with copious amounts of water for a minimum of 15 minutes while removing clothes. • It is important to seek medical attention for all eye exposures due to potential caustic burns to the eyes. • Immediately contact or summon an emergency physician in case of intoxication symptoms. • An ophthalmologist should also be consulted for evaluation of caustic burns to the eyes. **Note**: Eye burns may not be apparent for up to 48 hours post exposure due to the caustic properties of sodium cyanide.
Inhalation	• Inhalation is possible if cyanide is in the form of aerosols, mists, dusts, or smoke. • Never perform direct mouth-to-mouth or mouth-to-nose artificial respiration. • Use artificial respiration bag or respirator due to the potential danger of poisoning the rescuers! • Maintain an open airway. • In case of breathing difficulties immediately apply oxygen. • Immediately contact an emergency physician and notify of cyanide / hydrocyanic acid poisoning.
Ingestion	• Thoroughly rinse mouth with water. • Seek professional medical care immediately. • Do not induce vomiting. • Call emergency physician immediately and notify of cyanide / hydro-cyanic acid poisoning. • Immediately transport to a medical facility.

Notes to Physician

IMPORTANT: Specific antidote and treatment may vary by region. If you are not familiar with current treatment recommendations, you should contact the Poison Control Center for your region or country for specific recommendations and guidelines.

Possible Signs of Poisoning Intoxication is classified by 2 categories:• Mild poisoning • Severe poisoning

The following symptoms are not sufficient to ensure a correct diagnosis:

Symptoms of the Central Nervous System	**Early Stage:** • headache • dizziness • drowsiness • nausea **Advanced Stage:** • seizures • coma
Pulmonary Symptoms	**Early Stage:** • dyspnea • tachypnea **Advanced Stage:** • hyperventilation • Cheyne-Stokes respiration • apnea

Cardiovascular Symptoms	**Early Stage:** • hypertension • sinus arrhythmia • atrioventricular arrhythmia • bradycardia **Advanced Stage:** • tachycardia • complex arrhythmia • cardiac arrest
Skin Symptoms	**Early Stage:** • rosy skin color **Advanced Stage:** • cyanosis
Effect on the Metabolism	Lactate acidosis: pH 7.1 and lactate level of 17 mmol/l are described.
Treatment	The treatment advice may vary by region. Contact a regional poison control center for appropriate antidote treatment used in your region.

CAUTION: This is an outline of antidotes available for informational purposes. It is important for the treating physician to be familiar with the administration of cyanide antidotes available in the country where the chemical is being used! Rapid treatment with appropriate antidote therapy is essential to saving lives during a high dose acute exposure to cyanide.

NOTE: Removal of toxic substance has equal importance to implementation of antidote therapy.

Mild Poisoning	• Treatment is dependent on clinical presentation with symptoms and history of exposure (related to dose). • 100% oxygen (medical grade) and artificial respiration if indicated. • Closely monitor patient and their vital signs (blood pressure, pulse and respirations). • Monitor the patient for onset of symptoms or deterioration of status. • Depending on the pathology and clinical findings, based on strictly monitored controls of the clinical findings, it may be necessary for the physician to implement symptom-oriented treatment for pulmonary edema prophylaxis. • X-rays of the lungs may be necessary for pulmonary edema diagnosis.
Severe Poisoning	• Specific antidote treatment can be indicated for moderate to severe cyanide intoxication. • It is important to know that there are several different types of antidotes available for treatment of cyanide intoxication in different countries.
For All Cyanide Exposure	• All cyanide exposed persons should undergo continued monitoring for several hours, even if patient feels well to ensure there are no residual or recurrent poisoning symptoms. • Artificial respiration with 100% oxygen (medical grade). • Immediate antidote administration with the legal antidote for the country of the exposure.

Commonly Used Antidotes

Met hemoglobin-Forming Agent

Nitrite Therapy: amyl nitrite, sodium nitrite, sodium thiosulfate.

For Moderate to Severe Exposures (patient still conscious)	Amyl Nitrite Aspirols: 1-3 aspirols administered as an inhalant, held 1-2 inches under the nose for 15 seconds, and then remove for 15 seconds. Read medication information insert prior to administering. Sodium nitrite 300-600 mg administered intravenously over a period of 5 to 15 minutes. Sodium thiosulfate (12.5 g - 100-500 mg/kg weight) intravenously over a period of 15-20 minutes. If patient is conscious, then Sodium thiosulfate may be administered as an antidote by itself: (See antidote package information insert). Sodium thiosulfate (12.5 g - 100-500 mg/kg weight) IV may be administered depending on the clinical presentation and symptoms.

Complexing Antidote Agent

Hydroxocobalamin - commonly known as the Cyanokit®.

Treatment as Follows:	Administer hydroxocobalamin (Cyanokit®) 5 g i.v. (70 mg/kg b.w. in adults) by infusion over a period of 20-30 minutes. Administration of this dose can be repeated as required depending on the severity of poisoning. Infusion time for repeated dose: 30 minutes to 2 hours. The only permissible route of administration for hydroxocobalamin is intravenously. The physician should read the medication package information carefully to ensure proper reconstitution to liquid state and administration of antidote!

SECTION 5. FIRE-FIGHTING MEASURES

Flammable Properties

Flash Point	Not Combustible
Lower Explosion Limit	Not Applicable
Upper Explosion Limit	Not Applicable
Autoignition Temperature	Not Applicable
Suitable Extinguishing Media	Quenching Powder In case of fire in the surroundings: alkali powder quenching agent.
Unsuitable Extinguishing Media	Carbon dioxide (CO_2) must not be used for safety reasons.
Exposure Hazards During Fire Fighting	Hydrocyanic acid (hydrogen cyanide) may be released in case of fire.
Personal Protective Equipment for Fire Fighters	As in any fire, wear self-contained positive-pressure breathing apparatus, (MSHA/NIOSH approved or equivalent) and full protective gear.

Further Information

• Standard procedure for chemical fires. Ensure there are sufficient retaining facilities for water used to extinguish fire. • Water used to extinguish fire should not enter drainage systems, soil or stretches of water. • Contaminated fire-extinguishing water must be disposed of in accordance with the regulations issued by the appropriate local authorities. • Fire residues should be disposed of in accordance with local, state and federal regulations.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personnel Precautions	• Wear personal protective equipment. • Keep out unprotected persons. • Keep unauthorized persons away. • Ensure sufficient ventilation. • Avoid skin contact because of the danger of skin absorption. • Make safe or remove all sources of ignition.
Environmental Precautions	• Do not allow entrance in soil, stretches of water, groundwater, drainage systems or surface water. • Cyanide-containing sewage water and solutions must be decontaminated before entering a public canal, network or stretch of water. • Do not use a neutralizing agent if runoff can enter nearby streams, rivers or other surface waterways. • On contact with acid, hydrogen cyanide in produced.
Methods for Cleanup in the Event of a Spill	• Pick up mechanically if in solid form. • Absorb with liquid-binding material e.g., inert absorbent if in solution. • Collect in suitable containers. • Dispose of material in accordance with local, state and federal regulations. • Waste to be packed like clean product and to be properly labeled. • Identification label on packages not to be removed until recycled.

SECTION 7. HANDLING & STORAGE

NOTE: Always have on hand a cyanide antidote kit and trained medical responders who can administer first aid before beginning work with this product.

Handling

Safe Handling Advice	• Container may be opened only under exhaust ventilation hood. • Seal container hermetically immediately after use. • Store under lock and key or in a way that qualified persons have access to it. • Use caution when opening the package, since toxic and caustic gases and vapors may escape.
Advice on Protection Against Fire and Explosion	• The product is not combustible. • See Section 5.

Storage

Requirements for Storage Areas and Containers	• Keep container tightly sealed and store in a dry, well-ventilated place. • Ensure there are sufficient retaining facilities for water used to extinguish fire.
Unsuitable Materials	• Aluminum • Brass • Copper
Advice on Common Storage	• Do not store together with acid and acidic salts. • Keep away from food, drink and animal feedstuffs.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Product Occupational Exposure Guidelines

Sodium Cyanide	CAS-No. 143-33-9	EC No. 205-599-4
PEL (OSHA)	5mg/m^3 as CN 8-hr Time-Weighted Avg	Skin Designation
TLV (ACGIH)	5 mg/m^3 as CN Ceiling Limit	Skin Designation

Component Occupational Exposure Guidelines

Hydrogen Cyanide	CAS-No. 74-90-8	EC No. 200-821-6
PEL (OSHA)	10 ppm as CN 8-hr Time-Weighted Avg	Skin Designation
	11mg/m^3 as CN 8-hr Time-Weighted Avg	Skin Designation
TLV (ACGIH)	4.7 ppm as CN Ceiling Limit	Skin Designation
	5 mg/m^3 as CN Ceiling Limit	Skin Designation

* Skin Designation refers to the potential signifcant contribution to the overall exposure by the cutaneous route, including mucos membranes and the eyes, by contact with vapors, liquids and solids.

Engineering controls • Engineer out the risk of exposure if feasible. • Ensure suitable ventilation at the work place and with operational machinery.

Personal Protective Equipment

Respiratory Protection • A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 or applicable state/federal requirements must be followed whenever workplace conditions warrant respirator use. • NIOSH's "Respirator Decision Logic" may be useful in determining the suitability of various types of respirators.

Hand Protection • Natural Rubber • Nitrile • Polychrolorprene w/ natural latex rubber • PVC

Note: The above mentioned hand protection is based on knowledge of the chemistry and anticipated uses of this product but it may not be appropriate for all workplaces. A hazard assessment should be conducted prior to use to ensure suitability of gloves for specific work environments and processes prior to use.

Eye Protection • Impact resistant chemical protective goggles • Face-shield with brow guard

Skin and Body Protection • Wear chemical protective suit. • During cleaning work wear rubber or plastic boots. • To identify additional Personal Protective Equipment (PPE) requirements, it is recommended that a hazard assessment in accordance with the OSHA PPE Standard (29CFR1910.132) be conducted before

	using this product. • A safety shower and eye wash fountain must be readily available. • Wash contaminated clothing before re-use.
Hygiene Measures	• Avoid contact with skin. • After contact with skin, wash immediately with plenty of water. • No eating, drinking, smoking, chewing gum or snuffing tobacco at work. • Wash face and/or hands before break and end of work.
Protective Measures	• All precautionary measures indicated have to be observed. • The work-place related airborne concentrations have to be kept below the indicated exposure limits. • If the limits at the workplace are exceeded and/or larger amounts are released (leakage, spilling, dust) the indicated respiratory protection should be used. (see above)

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical

Form	:	Solid
Color	:	White
Odor	:	Odorless to bitter almond-like odor
Odor Threshold	:	0.5 ppm – 5.0 ppm as HCN **Note**: Some people are unable to smell cyanide. Others can smell it at first, but then can be desensitized to the odor.

Chemical

pH	:	Approx 12.0 Aqueous Solution
Melting point/range	:	562 °C
Boiling point/range	:	1497 °C
Flash Point	:	Not Combustible
Evaporation rate	:	Not Applicable
Flammability	:	Not Flammable
Lower Explosion Limit	:	Not Applicable
Upper Explosion Limit	:	Not Applicable
Vapor Pressure	:	100 Pa at 800 °C
Relative Density	:	Approx 1.6 g/cm^3 at 20 °C
Water Solubility	:	Approx. 379 g/l at 20 °C Approx. 450 g/l at > 35 °C
Partition Coefficient (N-octanol/water)	:	log Pow: -0.44 (calculated)
Autoignition Temperature	:	Not Applicable
Decomposition Temperature	:	HCN: Hydrogen cyanide (hydrocyanic acid) forms if heated above 300 °C
Viscosity	:	Not Applicable

Further Information

Miscibility in Water	:	Completely Miscible

SECTION 10. STABILITY AND REACTIVITY

Reactivity	Stable under normal temperatures and pressures.
Chemical Stability	Stable under normal storage conditions.
Possibility of Hazardous Reactions	Contact with strong oxidizers such as acids and acid salts causes immediate formation of toxic and flammable hydrogen cyanide gas.
Conditions to Avoid	Keep away from acidic salts. Under the action of acids (as well as carbon dioxide) hydrocyanic acid is released which is combustible and may react with air to form explosive gas mixtures. Do not store above 43 °C or product may begin to decompose into ammonia and formates.
Incompatible Materials	Strong oxidizers such as acids and acid salts, carbon dioxide
Hazardous Decomposition Products	Hydrogen cyanide (hydrocyanic acid) HCN and oxides of nitrogen can be produced under fire conditions, Ammonia vapors can be produced during decomposition from excessive heat, Hydrogen cyanide can be produced if mixed with acids or strong oxidizers.

SECTION 11. TOXICOLOGICAL INFORMATION

Sodium Cyanide

Acute toxicity	:	Inhaling of (approx. 270 ppm HCN in the air breathed) or swallowing (approx. 200 - 300 mg NaCN) can result in immediate unconsciousness and death. Oral: LD50 Rat: 5 mg/kg Method: Literature Dermal: LD50 Rabbit (female): 11.8 mg/kg Method: Literature Inhalation: LC50: No data available
Skin corrosion/irritation	:	Due to high pH (high alkylinity), contact with skin can cause irritation and possible chemical burns.
Serious eye damage/irritation	:	Due to high pH (high alkylinity), contact with eyes can cause severe damage.
Respiratory or skin sensitization	:	Very toxic by inhalation, can be absorbed through the skin.
Germ cell mutagenicity	:	No data available
Carcinoginicity	:	IARC Carcinoginicity Rating: Not listed
Reproductive toxicity	:	No data available
STOT – single exposure	:	Central nervous system, lungs, blood and heart
STOT – repeated exposure	:	Following long-term exposure individual cases of thyroid dysfunction have been described with electroplaters and silver polishers.
Aspiration hazard	:	Inhalation is possible if cyanide is in the form of aerosols, mists, dusts, or smoke.
Likely Routes of Exposure	:	Absorption through skin, mucous membranes, and the eyes. Inhalation in the form of aerosols, mists, dusts, or smoke.

Symptoms related to physical, chemical and toxicological charateristics

Symptoms of the Central Nervous System	**Early Stage:** • headache • dizziness • drowsiness • nausea **Advanced Stage:** • seizures • coma

Pulmonary Symptoms	**Early Stage:** • dyspnea • tachypnea **Advanced Stage:** • hyperventilation • Cheyne-Stokes respiration • apnea
Cardiovascular Symptoms	**Early Stage:** • hypertension • sinus arrhythmia • atrioventricular arrhythmia • bradycardia **Advanced Stage:** • tachycardia • complex arrhythmia • cardiac arrest
Skin Symptoms	**Early Stage:** • rosy skin color **Advanced Stage:** • cyanosis
Effect on the Metabolism	Lactate acidosis: pH 7.1 and lactate level of 17 mmol/l are described.

SECTION 12. ECOLOGICAL INFORMATION

Elimination Information (Persistence and Degradability)

Biodegradability	:	Potentially biodegradable Abiotic degradation Hydrolysis
Bioaccumulation	:	Low
Mobility	:	In Air: High as HCN

Ecotoxicity Effects

Fish	:	LC50 Leuciscus idus melanotus: 0.07 mg/l
Daphnia	:	EC50 Daphnia magna: 0.3 mg/l
Bacteria	:	EC50 Escherichia coli: 0.004 mg/l

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Disposal • Waste must be disposed of in accordance with local, state, provincial and federal laws and regulations. • Empty containers must be handled with care due to product residue.

SECTION 14. TRANSPORT INFORMATION

DOT / AAR / Sea Transport IMDG-Code

Class	:	6.1
UN Number	:	1689
Packing Group	:	1
Proper Shipping Name	:	SODIUM CYANIDE, SOLID

GHS Shipping Labels **DANGER!**

Marine Pollutant	:	Yes

Air Transport ICAO-TI/IATA-DGR

Class	:	6.1
UN Number	:	1689
Packing Group	:	1
Proper Shipping Name	:	SODIUM CYANIDE, SOLID

GHS Shipping Labels **DANGER!**

Loading Instructions/Remarks

IATA_C	:	ERG-Code 6L
IATA_P	:	ERG-Code 6L
IMDG	:	Do not stow in external container rows

Transport/Futher Information

Do not store together with acids (danger of toxic gases) or with foodstuffs, consumables and feedstuffs.

NOTE: Sodium cyanide is NOT a DOT TIH or PIH.

SECTION 15. REGULATORY INFORMATION

US Federal Regulations

OSHA — If listed below, chemical specific standards apply to the product or components:
- None Listed

CAA Section 112 — If listed below, components present at or above the de minimus level are hazardous air pollutants:
- Sodium Cyanide CAS No. 143-33-9

CERCLA Reportable Quantities — If listed below, a reportable quantity (RQ) applies to the product based on the percent of the named component:
- Sodium Cyanide CAS No. 143-33-9 Reportable Quantity: 10 lbs

SARA Title III Section 311/312 Hazard Categories — The product meets the criteria only for the listed hazard classes:
- Acute Health Hazard

SARA Title III Section 313 Reportable Substances — If listed below, components are 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:
- Sodium Cyanide CAS No. 143-33-9 Reportable Quantity: 10 lbs

Toxic Substance Control Act (TSCA) — If listed below, non-proprietary substances are subject to export notification under Section 12 (b) of TSCA:
- None Listed

State Regulations

California Prop 65 — A warning under the California Drinking Water Act is required only if listed below:
- None Listed

Canadian Regulations

WHMIS 2015 Classification

Acute Toxicity – Oral – Category 2
Acute Toxicity – Dermal – Category 1
Acute Toxicity – inhalation – Category 1
Releases toxic gas upon contact with strong oxidizers: hydrogen cyanide
Skin corrosion/irritation – Category 1
Strong base: pH of solution - 12.0
Serious eye damage/eye irritation – Category 1
Strong base: pH of solution – 12.0
Health hazards not otherwise classified (corrosion) – Category 1

Danger

Fatal if swallowed (H300)

Fatal in contact with skin (H310)

On contact with strong oxidizers (acids) releases gases with are fatal if inhaled: hydrogen cyanide

Causes severe skin burns and eye damage (H314)

Causes sever damage to the respiratory tract

International Chemical Inventory Status Unless otherwise noted, this product is in compliance with the inventory listing of the countries listed below.

Listed/registered: • Europe (EINECS/ELINCS) • USA (TSCA) • Canada (DSL) • Australia (AICS) • Japan (MITI) • Korea (TCCL) • Philippines (PICCS) •China

European Union Risk and Safety Phrases

Risk Sodium cyanide is classified as toxic.

- R25 • R26 • R27 • R28 - Very toxic by inhalation, in contact with skin and if swallowed.
- R32 – Contact with acids liberates very toxic gas.
- R36 • R37 • R38 - Irritating to eyes, respiratory system and skin.
- R41 – Risk of serious damage to the eyes.
- R50 • R53 - Very toxic to aquatic organisms may cause long-term adverse effects in the aquatic environment.
- R55 • R56 • R57 - Toxic to fauna, soil organisms and bees.
- R67 - Vapors may cause drowsiness and dizziness.

Safety Sodium cyanide is a hazardous substance.

- S1 • S2 • S4 - Keep locked up, out of the reach of children and away from living quarters.
- S7 • S9 - Keep container tightly closed and in a well ventilated place.
- S13 • S14 - Keep away from food, drink and animal feeding stuffs, acids, acid salts and carbon dioxide fire extinguishers.
- S18 - Handle and open container with care.
- S20 • S21 - When using do not eat, drink or smoke.
- S22 - Do not breathe dust.
- S24 • S25 - Avoid contact with skin and eyes.
- S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S27 - Take off immediately all contaminated clothing.
- S28 - After contact with skin, wash immediately with plenty of water.
- S29 - Do not empty into drains.
- S36 • S37 • S39 - Wear suitable protective clothing, gloves and eye/face protection.
- S38 - In case of insufficient ventilation, wear suitable respiratory equipment.
- S40 - To clean the floor and all objects contaminated by this material use sodium or calcium hypochlorite solution.
- S41 • S43 - In case of fire and/or explosion do not breathe fumes, use water, chemical powder or foam. Never use carbon dioxide.
- S45 - In case of accident or if you feel unwell seek medical attention immediately (show the label where possible).
- S46 • S64 - If swallowed, rinse mouth with water (only if the person is conscious), seek medical advice immediately and show this label.
- S50 - Do not mix with carbon dioxide, acids or acid salts
- S51 - Use only in well-ventilated areas.
- S53 - Avoid exposure – Obtain special instruction before use.
- S56 - Dispose of this material and its container to hazardous or special waste collection point
- S59 - Refer to manufacturer for information on recovery/recycling.
- S57 - Use appropriate containment to avoid environmental contamination.
- S61 - Avoid releases to the environment. Refer to special instructions/Safety data sheet.
- S63 - In case of accident by inhalation: remove casualty to fresh air and keep at rest.

SECTION 16. OTHER INFORMATION

Further Information

This version replaces all previous versions.

Significant changes to information from the previous version are noted with a bar in the left hand margin.

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Sodium Hydroxide, 0.5M

SECTION 1 : Identification of the substance/mixture and of the supplier

Product name : **Sodium Hydroxide, 0.5M**

Manufacturer/Supplier Trade name:

Manufacturer/Supplier Article number: **S25881**

Recommended uses of the product and uses restrictions on use:

Manufacturer Details:

AquaPhoenix Scientific
9 Barnhart Drive, Hanover, PA 17331

Supplier Details:

Fisher Science Education
15 Jet View Drive, Rochester, NY 14624

Emergency telephone number:

Fisher Science Education Emergency Telephone No.: 800-535-5053

SECTION 2 : Hazards identification

Classification of the substance or mixture:

Corrosive
Serious eye damage, category 1
Corrosive to metals, category 1
Skin corrosion, category 1B

Skin Corr. 1B
Eye corr. 1
Metal Corr. 1

Signal word :Danger

Hazard statements:
May be corrosive to metals
Causes severe skin burns and eye damage
Causes serious eye damage

Precautionary statements:
If medical advice is needed, have product container or label at hand
Keep out of reach of children
Read label before use
Keep only in original container
Do not breathe dust/fume/gas/mist/vapours/spray
Wash ... thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Absorb spillage to prevent material damage
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

Immediately call a POISON CENTER or doctor/physician
Store in a corrosive resistant/... container with a resistant inner liner
Store locked up
Dispose of contents/container to ...

Other Non-GHS Classification:

WHMIS

E

NFPA/HMIS

NFPA SCALE (0-4)

Health	3
Flammability	0
Physical Hazard	0
Personal Protection	X

HMIS RATINGS (0-4)

SECTION 3 : Composition/information on ingredients

Ingredients:		
CAS 1310-73-2	Sodium Hydroxide	2 %
CAS 7732-18-5	Deionized Water	98 %
		Percentages are by weight

SECTION 4 : First aid measures

Description of first aid measures

After inhalation: Move exposed individual to fresh air. Loosen clothing as necessary and position individual in a comfortable position.Seek medical advice if discomfort or irritation persists.If breathing difficult, give oxygen.

After skin contact: Take off contaminated clothing and shoes immediately.Wash affected area with soap and water.Seek medical attention if irritation, discomfort persist.

After eye contact: Protect unexposed eye. Rinse/flush exposed eye(s) gently using water for 15-20 minutes. Remove contact lens(es) if able to do so during rinsing. Immediately get medical assistance.

After swallowing: Rinse mouth thoroughly. Do not induce vomiting. Have exposed individual drink sips of water. Seek medical attention if irritation, discomfort or vomiting persists.

Most important symptoms and effects, both acute and delayed:

Irritation, Nausea,Headache, Shortness of breath.;

Indication of any immediate medical attention and special treatment needed:

If seeking medical attention, provide SDS document to physician.

SECTION 5 : Firefighting measures

Extinguishing media

Suitable extinguishing agents: If in laboratory setting, follow laboratory fire suppression procedures. Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition

For safety reasons unsuitable extinguishing agents:

Special hazards arising from the substance or mixture:

Combustion products may include carbon oxides or other toxic vapors.Thermal decomposition can lead to release of irritating gases and vapors.Sodium oxides.

Advice for firefighters:

Protective equipment: Use NIOSH-approved respiratory protection/breathing apparatus.

Additional information (precautions): Move product containers away from fire or keep cool with water spray as a protective measure, where feasible.

SECTION 6 : Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Wear protective equipment. Transfer to a disposal or recovery container.Use respiratory protective device against the effects of fumes/dust/aerosol. Keep unprotected persons away. Ensure adequate ventilation.Keep away from ignition sources. Protect from heat.

Environmental precautions:

Prevent from reaching drains, sewer or waterway. Collect contaminated soil for characterization per Section 13

Methods and material for containment and cleaning up:

If in a laboratory setting, follow Chemical Hygiene Plan procedures.Place into properly labeled containers for recovery or disposal. If necessary, use trained response staff/contractor.Collect liquid and dilute with water. Neutralize with dilute acid solutions. Decant water to drain with excess water. Absorb with suitable material. Dispose of remaining solid as normal refuse. Always obey local regulations.

Reference to other sections:

SECTION 7 : Handling and storage

Precautions for safe handling:

Absorb spillage to prevent material damage due to corrosiveness to metal. Avoid contact with eyes, skin, and clothing. Wash hands after handling. Do not mix with acids.Follow good hygiene procedures when handling chemical materials. Use only in well ventilated areas.

Conditions for safe storage, including any incompatibilities:

Protect from freezing and physical damage.Provide ventilation for containers. Avoid storage near extreme heat, ignition sources or open flame. Store away from foodstuffs. Store away from oxidizing agents.Store in cool, dry conditions in well sealed containers. Store with Corrosives.

SECTION 8 : Exposure controls/personal protection

Control Parameters: 1310-73-2, Sodium Hydroxide, OSHA PEL TWA 2 mg/m3
1310-73-2, Sodium Hydroxide, ACGIH TLV TWA 2 mg/m3

Appropriate Engineering controls: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use/handling.Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor or dusts (total/respirable) below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above.

Respiratory protection: Not required under normal conditions of use. Use suitable respiratory protective device when high concentrations are present. Use suitable respiratory protective device when aerosol or mist is formed. For spills, respiratory protection may be advisable.

Protection of skin: The glove material has to be impermeable and resistant to the product/ the substance/ the preparation being used/handled.Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.

Eye protection: Safety glasses with side shields or goggles.

General hygienic measures: The usual precautionary measures are to be adhered to when handling chemicals. Keep away from food, beverages and feed sources. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Do not inhale gases/fumes/dust/mist/vapor/aerosols. Avoid contact with the eyes and skin.

SECTION 9 : Physical and chemical properties

Appearance (physical state,color):	Clear, colorless liquid	**Explosion limit lower**: **Explosion limit upper**:	Non Explosive Non Explosive
Odor:	Odorless	**Vapor pressure**:	14mmHg @ 20C
Odor threshold:	Not Determined	**Vapor density**:	>1
pH-value:	Alkaline	**Relative density**:	Approx 1
Melting/Freezing point:	Approx 0°C	**Solubilities**:	Soluble in Water
Boiling point/Boiling range:	Approx 100°C	**Partition coefficient (n-octanol/water)**:	Not Determined
Flash point (closed cup):	Not Determined	**Auto/Self-ignition temperature**:	Not Determined
Evaporation rate:	Not Determined	**Decomposition temperature**:	Not Determined
Flammability (solid,gaseous):	Not Determined	**Viscosity**:	a. Kinematic:Not Determined b. Dynamic: Not Determined
Density: Not Determined			

SECTION 10 : Stability and reactivity

Reactivity:
Chemical stability: No decomposition if used and stored according to specifications.
Possible hazardous reactions:
Conditions to avoid: Incompatible materials, excess heat

Incompatible materials:acids, Organic materials, Chlorinated solvents, Aluminum, Phosphorus, Tin/tin oxides, Zinc
Hazardous decomposition products:sodium oxides, hydrogen. Carbon oxides (CO, CO2).

SECTION 11 : Toxicological information

Acute Toxicity: No additional information.	
Chronic Toxicity: No additional information.	
Corrosion Irritation: No additional information.	
Sensitization:	No additional information.
Single Target Organ (STOT):	No additional information.
Numerical Measures:	No additional information.
Carcinogenicity:	No additional information.
Mutagenicity:	No additional information.
Reproductive Toxicity:	No additional information.

SECTION 12 : Ecological information

Ecotoxicity Persistence and degradability: Readily degradable in the environment.
Bioaccumulative potential: Not Bioaccumulative.
Mobility in soil:
Other adverse effects:

SECTION 13 : Disposal considerations

Waste disposal recommendations:

Product/containers must not be disposed together with household garbage. Do not allow product to reach sewage system or open water.It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11). Consult federal state/ provincial and local regulations regarding the proper disposal of waste material that may incorporate some amount of this product.Neutralize with dilute acid solutions.

SECTION 14 : Transport information

UN-Number

1824

UN proper shipping name

Sodium hydroxide solution

Transport hazard class(es)

Class:
8 Corrosive substances

Packing group:II
Environmental hazard:
Transport in bulk:

Special precautions for user:

SECTION 15 : Regulatory information

United States (USA)

SARA Section 311/312 (Specific toxic chemical listings):

None of the ingredients is listed

SARA Section 313 (Specific toxic chemical listings):

None of the ingredients is listed

RCRA (hazardous waste code):

None of the ingredients is listed

TSCA (Toxic Substances Control Act):

All ingredients are listed.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):

1310-73-2 Sodium Hydroxide 1000 lb

Proposition 65 (California):

Chemicals known to cause cancer:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed

Chemicals known to cause developmental toxicity:

None of the ingredients is listed

Canada

Canadian Domestic Substances List (DSL):

All ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 0.1%):

None of the ingredients is listed

Canadian NPRI Ingredient Disclosure list (limit 1%):

1310-73-2 Sodium Hydroxide

SECTION 16 : Other information

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.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 applicable to this material.

GHS Full Text Phrases:

Abbreviations and acronyms:
IMDG: International Maritime Code for Dangerous Goods
PNEC: Predicted No-Effect Concentration (REACH)
CFR: Code of Federal Regulations (USA)
SARA: Superfund Amendments and Reauthorization Act (USA)
RCRA: Resource Conservation and Recovery Act (USA)
TSCA: Toxic Substances Control Act (USA)
NPRI: National Pollutant Release Inventory (Canada)
DOT: US Department of Transportation
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
WHMIS: Workplace Hazardous Materials Information System (Canada)
DNEL: Derived No-Effect Level (REACH)

Effective date : 12.14.2014
Last updated : 03.25.2015

SAFETY DATA SHEET

Version 6.3
Revision Date 29.03.2022
Print Date 08.10.2022

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Sodium hypochlorite solution

Product Number : 425044
Brand : SIGALD

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

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : SIGMA-ALDRICH CANADA LTD.
2149 WINSTON PARK DRIVE
OAKVILLE ON L6H 6J8
CANADA

Telephone : +1 905 829-9500
Fax : +1 905 829-9292

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA)
+1-703-527-3887 CHEMTREC (International)
24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with Hazardous Products Regulations (HPR) (SOR/2015-17)

Skin corrosion (Category 1B), H314
Serious eye damage (Category 1), H318
Short-term (acute) aquatic hazard (Category 1), H400
Long-term (chronic) aquatic hazard (Category 2), H411

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal word Danger

Hazard statement(s)

H314	Causes severe skin burns and eye damage.
H400	Very toxic to aquatic life.
H411	Toxic to aquatic life with long lasting effects.

Precautionary statement(s)

P264	Wash skin thoroughly after handling.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P363	Wash contaminated clothing before reuse.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

Contact with acids liberates toxic gas.

- none

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Formula : ClNaO
Molecular weight : 74.44 g/mol

Component		Classification	Concentration *
sodium hypochlorite solution			
CAS-No. EC-No. Index-No.	7681-52-9 231-668-3 017-011-00-1	Skin Corr. 1B; Eye Dam. 1; STOT SE 3; Aquatic Acute 1; Aquatic Chronic 1; H314, H318, H335, H400, H410 M-Factor - Aquatic Acute: 10 - Aquatic Chronic: 1	>= 10 - < 30 %
* Weight %			

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Call in physician.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

In case of eye contact
After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

If swallowed
After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation). Call a physician immediately. Do not attempt to neutralise.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Hydrogen chloride gas
Sodium oxides
Not combustible.
Ambient fire may liberate hazardous vapours.

5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information
Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Tightly closed.
Do not store near acids.

Storage stability
Recommended storage temperature
2 - 8 °C

Storage class
Storage class (TRGS 510): 8B: Non-combustible, corrosive hazardous materials

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Components with workplace control parameters
Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Appropriate engineering controls
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

Skin protection
Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Body Protection
protective clothing

Respiratory protection
required when vapours/aerosols are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: liquid
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	-28.9 °C (-20.0 °F)
f)	Initial boiling point and boiling range	111 °C 232 °F
g)	Flash point	()Not applicable
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available

k)	Vapor pressure	23.3 hPa at 20 °C (68 °F)
l)	Vapor density	No data available
m)	Density	1.206 g/mL at 25 °C (77 °F)
	Relative density	No data available
n)	Water solubility	completely miscible soluble
o)	Partition coefficient: n-octanol/water	No data available
p)	Autoignition temperature	Not applicable
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	Not classified as explosive.
t)	Oxidizing properties	none

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions
Violent reactions possible with:
Generates dangerous gases or fumes in contact with:
Acids
The generally known reaction partners of water.

10.4 Conditions to avoid
no information available

10.5 Incompatible materials
Strong acids, Organic materials, Powdered metals, Forms shock-sensitive mixtures with certain other materials., Amines, Reacts violently with ammonium salts, aziridine, methanol, and phenylaceto primary aliphatic or aromatic amines to form explosively unstable n-chlor 55°C.

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Mixture

Acute toxicity
Oral: No data available
Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.

Inhalation: No data available

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract
Dermal: No data available

No data available

Skin corrosion/irritation
No data available

Mixture causes burns.

Serious eye damage/eye irritation
No data available
Mixture causes serious eye damage. Risk of blindness!

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity
No data available

Reproductive toxicity
No data available
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

burning sensation, Cough, wheezing, laryngitis, Shortness of breath, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

Components

sodium hypochlorite solution

Acute toxicity
LD50 Oral - Rat - male - 1,100 mg/kg
(OECD Test Guideline 401)
Inhalation: No data available
LD50 Dermal - Rabbit - male and female - > 20,000 mg/kg
(OECD Test Guideline 402)

Skin corrosion/irritation
Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Serious eye damage/eye irritation
Causes serious eye damage.

Respiratory or skin sensitization
- Guinea pig
Result: Not a skin sensitizer.
(OECD Test Guideline 406)

Germ cell mutagenicity
Result: negative
Method: Mutagenicity (micronucleus test)
Species: Mouse - male
Result: negative

Carcinogenicity
No data available

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure

Remarks: No data available
May cause respiratory irritation.

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

SECTION 12: Ecological information

12.1 Toxicity

Mixture
No data available

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties

No data available

12.7 Other adverse effects

No data available

Components

sodium hypochlorite solution

Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 0.08 mg/l - 96 h Remarks: (Regulation (EC) No 1272/2008, Annex VI) (ECOTOX Database)
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 0.04 mg/l - 48 h Remarks: (Regulation (EC) No 1272/2008, Annex VI) (ECOTOX Database)
Toxicity to algae	static test ErC50 - Pseudokirchneriella subcapitata - 0.036 mg/l - 72 h (OECD Test Guideline 201) static test EC10 - Pseudokirchneriella subcapitata - 0.02 mg/l - 72 h (OECD Test Guideline 201)
Toxicity to bacteria	static test EC50 - activated sludge - 77.1 mg/l - 3 h (OECD Test Guideline 209) Remarks: (ECHA)

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

TDG

UN number: 1791 Class: 8 Packing group: III
Proper shipping name: HYPOCHLORITE SOLUTION
Labels: 8
ERG Code: 154
Marine pollutant: no

IMDG
UN number: 1791 Class: 8 Packing group: III EMS-No: F-A, S-B
Proper shipping name: HYPOCHLORITE SOLUTION (sodium hypochlorite solution)
Marine pollutant : yes
Marine pollutant : yes

IATA
UN number: 1791 Class: 8 Packing group: III
Proper shipping name: Hypochlorite solution

SECTION 15: Regulatory information

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR.

SECTION 16: Other information

Further information
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Version: 6.3 Revision Date: 29.03.2022 Print Date: 08.10.2022

SAFETY DATA SHEET

Version 6.2
Revision Date 30.06.2021
Print Date 18.06.2022

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Sodium nitrite

Product Number : 563218
Brand : Aldrich
Index-No. : 007-010-00-4
CAS-No. : 7632-00-0

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

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : MilliporeSigma Canada Ltd
2149 WINSTON PARK DRIVE
OAKVILLE ON L6H 6J8
CANADA

Telephone : +1 905 829-9500
Fax : +1 905 829-9292

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA)
+1-703-527-3887 CHEMTREC (International)
24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with Hazardous Products Regulations (HPR) (SOR/2015-17)

Oxidizing solids (Category 3), H272
Acute toxicity, Oral (Category 3), H301
Eye irritation (Category 2A), H319
Short-term (acute) aquatic hazard (Category 1), H400

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal word	Danger
Hazard statement(s)	
H272	May intensify fire; oxidizer.
H301	Toxic if swallowed.
H319	Causes serious eye irritation.
H400	Very toxic to aquatic life.
Precautionary statement(s)	
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P220	Keep away from clothing and other combustible materials.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310 + P330	IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
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.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

- none

SECTION 3: Composition/information on ingredients

3.1 Substances

Formula	:	$NNaO_2$
Molecular weight	:	69.00 g/mol
CAS-No.	:	7632-00-0
EC-No.	:	231-555-9
Index-No.	:	007-010-00-4

Component	Classification	Concentration *
sodium nitrite		
	Ox. Sol. 3; Acute Tox. 3; Eye Irrit. 2A; Aquatic Acute 1; H272, H301, H319, H400 M-Factor - Aquatic Acute: 1	<= 100 %
* Weight %		

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

In case of eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed
If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Foam Carbon dioxide (CO2) Dry powder

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Nitrogen oxides (NOx)
Sodium oxides
Combustible.
Risk of dust explosion.
Development of hazardous combustion gases or vapours possible in the event of fire.
Has a fire-promoting effect due to release of oxygen.

5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information
Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on protection against fire and explosion
Keep away from open flames, hot surfaces and sources of ignition.

Hygiene measures
Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Tightly closed. Away from combustible materials and sources of ignition and heat. Keep locked up or in an area accessible only to qualified or authorized persons. Do not store near combustible materials.

hygroscopic
Storage class (TRGS 510): 5.1B: Oxidizing hazardous materials

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

8.2 Exposure controls

Appropriate engineering controls
Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

Body Protection
protective clothing

Respiratory protection
required when dusts are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: solid Color: white, light yellow
b)	Odor	odorless
c)	Odor Threshold	Not applicable
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: 271 °C (520 °F)
f)	Initial boiling point and boiling range	No data available
g)	Flash point	()Not applicable
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	The product is not flammable.

j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	No data available
l)	Vapor density	No data available
m)	Relative density	No data available
n)	Water solubility	820 g/l at 20 °C (68 °F)
o)	Partition coefficient: n-octanol/water	Not applicable for inorganic substances
p)	Autoignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	The substance or mixture is classified as oxidizing with the category 3.

9.2 Other safety information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions

Risk of explosion with:
combustible substances
Aluminum
Sulfides
Cyanides
potassium cyanide
urea
hydrazine and derivatives
oxidisable substances
unsaturated hydrocarbons
sodium amide
phenol
Ethylene oxide
strong reducing agents
Ammonium salts
amides
hydrochloric acid
Potassium hexacyanoferrate (II)

A risk of explosion and/or of toxic gas formation exists with the following substances:
Acids
with
Amines
Release of:
Nitrosamine
Risk of ignition or formation of inflammable gases or vapours with:
butadiene
Exothermic reaction with:
Ethylene oxide

10.4 Conditions to avoid
Exposure to moisture.
no information available

10.5 Incompatible materials
No data available

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 186 mg/kg
Remarks: (RTECS)
Inhalation: No data available
Dermal: No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Moderate eye irritation
(OECD Test Guideline 405)

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity
No data available

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

RTECS: RA1225000
Headache, Nausea, Incoordination., Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Stomach - Irregularities - Based on Human Evidence

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	flow-through test LC50 - Oncorhynchus mykiss (rainbow trout) - 0.54 - 26.3 mg/l - 96 h Remarks: (ECHA)
Toxicity to daphnia and other aquatic invertebrates	static test EC50 - Daphnia magna (Water flea) - 15.4 mg/l - 48 h (OECD Test Guideline 202)
Toxicity to algae	static test ErC50 - Desmodesmus subspicatus (green algae) - > 100 mg/l - 72 h (OECD Test Guideline 201)
Toxicity to bacteria	static test EC50 - activated sludge - 510 mg/l - 3 h (OECD Test Guideline 209)

12.2 Persistence and degradability

The methods for determining biodegradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

TDG

UN number: 1500 Class: 5.1 (6.1) Packing group: III
Proper shipping name: SODIUM NITRITE
Subsidiary risk : 6.1
Labels: 5.1
(6.1)ERG Code: 140
Marine pollutant: no

IMDG

UN number: 1500 Class: 5.1 (6.1) Packing group: III EMS-No: F-A, S-Q
Proper shipping name: SODIUM NITRITE
Marine pollutant : yes

IATA

UN number: 1500 Class: 5.1 (6.1) Packing group: III
Proper shipping name: Sodium nitrite

SECTION 15: Regulatory information

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR.

SECTION 16: Other information

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

The branding on the header and/or footer of this document may temporarily not visually match the product purchased as we transition our branding. However, all of the information in the document regarding the product remains unchanged and matches the product ordered. For further information please contact mlsbranding@sial.com.

Version: 6.2 Revision Date: 30.06.2021 Print Date: 18.06.2022

Sulfamic Acid,ACS

SECTION 1 : Identification of the substance/mixture and of the supplier

Product name : **Sulfamic Acid,ACS**

Manufacturer/Supplier Trade name:

Manufacturer/Supplier Article number: **S25792**

Recommended uses of the product and uses restrictions on use:

Manufacturer Details:

AquaPhoenix Scientific
9 Barnhart Drive, Hanover, PA 17331

Supplier Details:

Fisher Science Education
15 Jet View Drive, Rochester, NY 14624

Emergency telephone number:

Fisher Science Education Emergency Telephone No.: 800-535-5053

SECTION 2 : Hazards identification

Classification of the substance or mixture:

Irritant
Skin irritation, category 2
Eye irritation, category 2A

Environmentally Damaging
Acute hazards to the aquatic environment, category 3
Chronic hazards to the aquatic environment, category 3

Skin irrit. 2
Eye irrit. 2A
Aquatic AcTox. 3
Aquatic ChrTox. 3

Signal word :Warning

Hazard statements:
Causes skin irritation
Causes serious eye irritation
Harmful to aquatic life with long lasting effects

Precautionary statements:
Wash ... thoroughly after handling
Avoid release to the environment
Wear protective gloves/protective clothing/eye protection/face protection
IF ON SKIN: Wash with soap and water
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing
Specific treatment (see ... on this label)
If skin irritation occurs: Get medical advice/attention
If eye irritation persists get medical advice/attention
Take off contaminated clothing and wash before reuse

Dispose of contents/container to ...

Other Non-GHS Classification:

WHMIS
NFPA/HMIS

NFPA SCALE (0-4)

HMIS RATINGS (0-4)

SECTION 3 : Composition/information on ingredients

Ingredients:		
CAS 5329-14-6	Sulfamic acid	>90 %
		Percentages are by weight

SECTION 4 : First aid measures

Description of first aid measures

After inhalation: Move exposed to fresh air. Give artificial respiration if necessary. If breathing is difficult give oxygen.Consult a physician.

After skin contact: Wash hands and exposed skin with soap and plenty of water. Consult a physician.

After eye contact: Rinse or flush exposed eye gently using water for 15-20 minutes. Consult a physician.

After swallowing: Never give anything by mouth to an unconscious person.Rinse mouth with water.Consult a physician.

Most important symptoms and effects, both acute and delayed:

Irritation.Headache.Shortness of breath.Nausea.;

Indication of any immediate medical attention and special treatment needed:

Provide SDS document to physician. Physician should treat symptomatically.

SECTION 5 : Firefighting measures

Extinguishing media

Suitable extinguishing agents: Use water, dry chemical, chemical foam, carbon dioxide, or alcohol-resistant foam.

For safety reasons unsuitable extinguishing agents:

Special hazards arising from the substance or mixture:

Nitrogen oxides.Sulphur oxides.

Advice for firefighters:

Protective equipment: Wear protective eyeware, gloves, and clothing. Refer to Section 8.

Additional information (precautions): Avoid generating dust. Avoid breathing vapors, dust, mist, or gas.Further processing of solid materials may result in the formation of combustible dusts.

SECTION 6 : Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Ensure adequate ventilation.Ensure that dust-handling systems (exhaust ducts, dust collectors, vessels, and processing equipment) are designed to prevent the escape of dust into the work area.

Environmental precautions:

Prevent from reaching drains, sewer, or waterway. Prevent further leakage or spillage.Should not be released into environment.

Methods and material for containment and cleaning up:

Sweep up and containerize for disposal. Avoid generating dust. Always obey local regulations.Sweep up and shovel.Keep in suitable closed containers for disposal.Follow proper disposal methods. Refer to Section 13.

Reference to other sections:

SECTION 7 : Handling and storage

Precautions for safe handling:

Avoid contact with skin, eyes, and clothing.Avoid dispersal of dust in the air. Do not clear dust on surfaces with compressed air.The potential for combustible dust formation should be taken into consideration before additional processing occurs.

Conditions for safe storage, including any incompatibilities:

Store product and empty container away from heat and sources of ignition.Keep container tightly closed in a cool, dry, and well-ventilated area. Store in inert atmosphere.

SECTION 8 : Exposure controls/personal protection

Control Parameters:	5329-14-6, Sulfamic Acid, Contains no substances with occupational exposure limit values.
Appropriate Engineering controls:	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor and mists below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above.Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling.
Respiratory protection:	Normal ventilation is adequate.Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls.When necessary use NIOSH approved breathing equipment.
Protection of skin:	Select glove material impermeable and resistant to the substance.Select glove material based on rates of diffusion and degradation. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices.Wear protective clothing.
Eye protection:	Wear equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).Safety glasses or goggles.

General hygienic measures: Perform routine housekeeping to prevent dust generation.Do not eat, drink, smoke, or use personal products when handling chemical substances.Wash hands before breaks and immediately after handling the product.

SECTION 9 : Physical and chemical properties

Appearance (physical state,color):	White solid	**Explosion limit lower**: **Explosion limit upper**:	Not Available Not Available
Odor:	Not Available	**Vapor pressure**:	0.008 hPa (0.006 mmHg) at 20°C; 0.025 hPa (0.019 mmHg) at 100°C
Odor threshold:	Not Available	**Vapor density**:	Not Available
pH-value:	1.5 at 10 g/l at 20°C	**Relative density**:	2.151 g/cm3 at 25°C
Melting/Freezing point:	215 - 225°C	**Solubilities**:	Solube in water: 213 g/l at 20°C
Boiling point/Boiling range:	Not Available	**Partition coefficient (n-octanol/water)**:	Not Available
Flash point (closed cup):	Not Available	**Auto/Self-ignition temperature**:	Not Available
Evaporation rate:	Not Available	**Decomposition temperature**:	209°C
Flammability (solid,gaseous):	Not Available	**Viscosity**:	a. Kinematic:Not Available b. Dynamic: Not Available
Density: Not Available			

SECTION 10 : Stability and reactivity

Reactivity: None under normal processing.
Chemical stability: Stable under normal conditions.
Possible hazardous reactions:
Conditions to avoid: Incompatible materials.
Incompatible materials: Strong oxidizing agents.Strong bases.
Hazardous decomposition products:

SECTION 11 : Toxicological information

Acute Toxicity:		
Oral:	5329-14-6	LD50 Oral - rat - 3,160 mg/kg
Chronic Toxicity: No additional information.		
Corrosion Irritation:		
Dermal:	5329-14-6	Skin - Human Result: Mild skin irritation
Ocular:	5329-14-6	Eyes - rabbit Result: Moderate eye irritation
Sensitization:		No additional information.

Single Target Organ (STOT):	No additional information.
Numerical Measures:	No additional information.
Carcinogenicity:	No additional information.
Mutagenicity:	No additional information.
Reproductive Toxicity:	No additional information.

SECTION 12 : Ecological information

Ecotoxicity

Toxicity to fish static test LC50 - Pimephales promelas (fathead minnow) - 70.3 mg/l - 96 h (OECD Test Guideline 203): 5329-14-6

Persistence and degradability:
Bioaccumulative potential:
Mobility in soil:
Other adverse effects:

SECTION 13 : Disposal considerations

Waste disposal recommendations:

Offer surplus and non-recyclable solutions to a licensed disposal company.Contact a licensed professional waste disposal service to dispose of this material.Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations. Ensure complete and accurate classification.

SECTION 14 : Transport information

UN-Number

2967

UN proper shipping name

Sulphamic acid

Transport hazard class(es)

Class:
8 Corrosive substances

Packing group:III
Environmental hazard:
Transport in bulk:
Special precautions for user:

SECTION 15 : Regulatory information

United States (USA)

SARA Section 311/312 (Specific toxic chemical listings):

Acute

SARA Section 313 (Specific toxic chemical listings):

None of the ingredients is listed

RCRA (hazardous waste code):

None of the ingredients is listed

TSCA (Toxic Substances Control Act):

All ingredients are listed.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):

None of the ingredients is listed

Proposition 65 (California):

Chemicals known to cause cancer:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed

Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed

Chemicals known to cause developmental toxicity:

None of the ingredients is listed

Canada

Canadian Domestic Substances List (DSL):

All ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 0.1%):

None of the ingredients is listed

Canadian NPRI Ingredient Disclosure list (limit 1%):

None of the ingredients is listed

SECTION 16 : Other information

GHS Full Text Phrases:

Abbreviations and acronyms:

Effective date : 01.10.2015
Last updated : 03.25.2015

SAFETY DATA SHEET

Creation Date 12-Nov-2010 **Revision Date** 24-Dec-2021 **Revision Number** 9

1. Identification

Product Name **Sulfuric Acid (Certified ACS Plus)**

Cat No. : **A300-212; A300-225LB; A300-500; A300-612GAL; A300-700LB; A300C212; A300C212EA; A300P500; A300S212; A300S212EA; A300S500; A300SI212;**

Synonyms Hydrogen sulfate; Vitriol brown oil; Oil of vitriol

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company
Fisher Scientific Company
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

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

Corrosive to metals	Category 1
Skin Corrosion/Irritation	Category 1 A
Serious Eye Damage/Eye Irritation	Category 1
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	

Label Elements

Signal Word
Danger

Hazard Statements
May be corrosive to metals
Causes severe skin burns and eye damage

May cause respiratory irritation

Precautionary Statements
Prevention
Do not breathe dust/fume/gas/mist/vapors/spray
Wear protective gloves/protective clothing/eye protection/face protection
Wash face, hands and any exposed skin thoroughly after handling
Use only outdoors or in a well-ventilated area
Keep only in original container
Response
Immediately call a POISON CENTER or doctor/physician
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Ingestion
IF SWALLOWED: Rinse mouth. DO NOT induce vomiting
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
None identified
WARNING. Cancer - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS No	Weight %
Sulfuric acid	7664-93-9	90 - 98
Water	7732-18-5	2 - 10

4. First-aid measures

General Advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Immediate medical attention is required.

Inhalation Remove to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Immediate medical attention is required.

Ingestion Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately.

Most important symptoms and effects Causes burns by all exposure routes. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media CO_2, dry chemical, dry sand, alcohol-resistant foam.

Unsuitable Extinguishing Media DO NOT USE WATER

Flash Point Not applicable
Method - No information available

Autoignition Temperature No information available

Explosion Limits
Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating gases and vapors. The product causes burns of eyes, skin and mucous membranes.

Hazardous Combustion Products
Sulfur oxides. Hydrogen.
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. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical hazards
3	0	2	W

6. Accidental release measures

Personal Precautions Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

Environmental Precautions Should not be released into the environment.

Methods for Containment and Clean Up Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance.

Storage. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from water or moist air. Corrosives area. Incompatible Materials. Water. Organic materials. Strong acids. Strong bases. Metals. Alcohols. Cyanides. Sulfides.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Sulfuric acid	TWA: 0.2 mg/m³	(Vacated) TWA: 1 mg/m³ TWA: 1 mg/m³	IDLH: 15 mg/m³ TWA: 1 mg/m³	TWA: 0.2 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures Use only under a chemical fume hood. Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Clear, Colorless to brown
Odor	Odorless
Odor Threshold	No information available
pH	0.3 (1N)
Melting Point/Range	10 °C / 50 °F
Boiling Point/Range	290 - 338 °C / 554 - 640.4 °F
Flash Point	Not applicable
Evaporation Rate	Slower than ether
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	< 0.001 mmHg @ 20 °C
Vapor Density	3.38 (Air = 1.0)
Specific Gravity	1.84
Solubility	Soluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	340°C
Viscosity	No information available
Molecular Formula	H2SO4
Molecular Weight	98.08

10. Stability and reactivity

Reactive Hazard Yes

Stability Reacts violently with water. Hygroscopic.

Conditions to Avoid Incompatible products. Excess heat. Exposure to moist air or water.

Incompatible Materials Water, Organic materials, Strong acids, Strong bases, Metals, Alcohols, Cyanides, Sulfides

Hazardous Decomposition Products Sulfur oxides, Hydrogen

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Oral LD50 Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.

Dermal LD50 Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.

Vapor LC50 Based on ATE data, the classification criteria are not met. ATE > 20 mg/l.

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sulfuric acid	2140 mg/kg (Rat)	Not listed	LC50 = 0.375 mg/L (Rat) 4 h
Water	-	-	-

Toxicologically Synergistic Products No information available

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

Irritation Causes severe burns by all exposure routes

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen. Exposure to strong inorganic mists containing sulfuric acid may cause cancer by inhalation.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Sulfuric acid	7664-93-9	Group 1	Known	A2	X	A2
Water	7732-18-5	Not listed	Not listed	Not listed	Not listed	Not listed

IARC (International Agency for Research on Cancer)

IARC (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 2A - Probably Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans

NTP: (National Toxicity Program)

NTP: (National Toxicity Program)
Known - Known Carcinogen
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen

ACGIH: (American Conference of Governmental Industrial Hygienists)

A1 - Known Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Animal Carcinogen
ACGIH: (American Conference of Governmental Industrial Hygienists)

Mexico - Occupational Exposure Limits - Carcinogens

Mexico - Occupational Exposure Limits - Carcinogens
A1 - Confirmed Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Confirmed Animal Carcinogen
A4 - Not Classifiable as a Human Carcinogen
A5 - Not Suspected as a Human Carcinogen

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

This product contains the following substance(s) which are hazardous for the environment. .

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Sulfuric acid	-	LC50: > 500 mg/L, 96h static (Brachydanio rerio)	-	EC50: 29 mg/L/24h

Persistence and Degradability No information available

Bioaccumulation/ Accumulation No information available.

Mobility No information available.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No UN1830
Proper Shipping Name Sulfuric acid
Hazard Class 8
Packing Group II

TDG

UN-No UN1830
Proper Shipping Name SULFURIC ACID
Hazard Class 8
Packing Group II

IATA

UN-No UN1830
Proper Shipping Name SULFURIC ACID
Hazard Class 8
Packing Group II

IMDG/IMO

UN-No UN1830
Proper Shipping Name SULFURIC ACID
Hazard Class 8
Packing Group II

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Sulfuric acid	7664-93-9	X	ACTIVE	-
Water	7732-18-5	X	ACTIVE	-

Legend:
TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Sulfuric acid	7664-93-9	X	-	231-639-5	X	X	X	X	X	KE-32570
Water	7732-18-5	X	-	231-791-2	X	X		X	X	KE-35400

KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

U.S. Federal Regulations

SARA 313

Component	CAS No	Weight %	SARA 313 - Threshold Values %
Sulfuric acid	7664-93-9	90 - 98	1.0

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Sulfuric acid	X	1000 lb	-	-

Clean Air Act Not applicable

OSHA - Occupational Safety and Health Administration Not applicable

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)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Sulfuric acid	1000 lb	1000 lb

California Proposition 65 This product contains the following Proposition 65 chemicals.

Component	CAS No	California Prop. 65	Prop 65 NSRL	Category
Sulfuric acid	7664-93-9	Carcinogen	-	Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Sulfuric acid	X	X	X	X	X

Water	-	-	X	-	-

U.S. Department of Transportation
Reportable Quantity (RQ): Y
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Authorisation/Restrictions according to EU REACH

Component	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Sulfuric acid	-	Use restricted. See item 75. (see link for restriction details)	-

https://echa.europa.eu/substances-restricted-under-reach

Safety, health and environmental regulations/legislation specific for the substance or mixture

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Sulfuric acid	7664-93-9	Listed	Not applicable	Not applicable	Not applicable
Water	7732-18-5	Listed	Not applicable	Not applicable	Not applicable

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Sulfuric acid	7664-93-9	Not applicable	Not applicable	Not applicable	Annex I - Y34
Water	7732-18-5	Not applicable	Not applicable	Not applicable	Not applicable

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 12-Nov-2010
Revision Date 24-Dec-2021
Print Date 24-Dec-2021
Revision Summary SDS sections updated. 2.

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 SDS

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 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 understand. 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/m3 (TWA)
Sodium hydroxide	2mg/m3	2mg/m3
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 is 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

PETRO-CANADA

Material Safety Data Sheet

NFPA	HMIS (U.S.A.)	Rating	Protective Clothing	DOT (pictograms)
	Health Hazard 1 Fire Hazard 1 Reactivity 0 Personal Protection B	0 Insignificant 1 Slight 2 Moderate 3 High 4 Extreme		

Section I. Chemical Product and Company Identification

Product Name	**2-CYCLE MOTOR OIL**	**Code**	460-401, TWOCYC
Synonym	Not available	**DSL**	On the DSL.
Manufacturer	PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3	**TSCA**	On TSCA list.
Material Uses	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.	**In case of Emergency**	Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).

Section II. Composition and Information on Ingredients

			Exposure Limits (ACGIH)		
Name	**CAS #**	**% (W/W)**	**TLV-TWA(8 h)**	**STEL**	**CEILING**
1) Severely hydrotreated paraffinic oil and additives.	Mixture	100	5 mg/m³ (oil mist)	10 mg/m³ (oil mist)	Not established

Manufacturer Recommendation	Not applicable
Other Exposure Limits	Consult local, state, provincial or territory authorities for acceptable exposure limits.

Section III. Hazards Identification.

Potential Health Effects	Non irritating to slight transient irritation to skin and eyes, but no permanent damage. Relatively non-toxic via ingestion. This product has a low vapour pressure and is not expected to present an inhalation exposure at ambient conditions. Upon heating to high temperatures, or mechanical actions which may produce vapours or mists, inhalation of product may cause irritation of the breathing passages. For more information, refer to Section 11.

Section IV. First Aid Measures

Eye Contact	IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek medical attention.
Skin Contact	Remove contaminated clothing - launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Seek medical attention.
Inhalation	Evacuate the victim to a safe area as soon as possible. If the victim is not breathing, perform artificial respiration. Allow the victim to rest in a well ventilated area. Seek medical attention.
Ingestion	DO NOT induce vomiting because of danger of aspirating liquid into lungs. Seek medical attention.
Note to Physician	Not available

Section V. Fire-fighting Measures

Flammability	May be combustible at high temperature.	**Flammable Limits**	Not available
Flash Points	OPEN CUP: 152°C (305.6°F) (Cleveland)	**Auto-Ignition Temperature**	Not available
Fire Hazards in Presence of Various Substances	Low fire hazard. This material must be heated before ignition will occur.	**Explosion Hazards in Presence of Various Substances**	Do not cut, weld, heat, drill or pressurize empty container. Containers may explode in heat of fire.
Products of Combustion	Carbon oxides (CO, CO2), nitrogen oxides (NOx), sulphur oxides (SOx), smoke and irritating vapours as products of incomplete combustion.		

Continued on Next Page

Available in French

Fire Fighting Media and Instructions	NAERG96, GUIDE 171, Substances (low to moderate hazard). If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (0.5 mile) in all directions; also, consider initial evacuation for 800 meters (0.5 mile) in all directions. Shut off fuel to fire if it is possible to do so without hazard. If this is impossible, withdraw from area and let fire burn out under controlled conditions. Withdraw immediately in case of rising sound from venting safety device or any discolouration of tank due to fire. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. SMALL FIRE: use DRY chemicals, foam, water spray or CO2. LARGE FIRE: use water spray, fog or foam. For small outdoor fires, portable fire extinguishers may be used, and self contained breathing apparatus (SCBA) may not be required. For all indoor fires and any significant outdoor fires, SCBA is required. Respiratory and eye protection are required for fire fighting personnel.

Section VI. Accidental Release Measures

Material Release or Spill	NAERG96, GUIDE 171, Substances (low to moderate hazard). ELIMINATE ALL IGNITION SOURCES. Avoid contact. Stop leak if without risk. Contain spill. Absorb with inert absorbents, dry clay, or diatomaceous earth. Avoid inhaling dust of diatomaceous earth for it may contain silica in very fine particle size, making this a potential respiratory hazard. Place used absorbent in closed metal containers for later disposal or burn absorbent in a suitable combustion chamber. DO NOT FLUSH TO SEWERS, STREAMS OR OTHER BODIES OF WATER. Check with applicable jurisdiction for specific disposal requirements of spilled material and empty containers. Notify the appropriate authorities immediately.

Section VII. Handling and Storage

Handling	Avoid inhalation and skin contact especially when handling used oil. Keep away from sources of ignition. DO NOT reuse empty containers without commercial cleaning or reconditioning. Practice good personal hygiene. Wash hands after handling and before eating. Launder work clothes frequently. Discard saturated leather goods.
Storage	Store in tightly closed containers in cool, dry, isolated, well-ventilated area, and away from incompatibles.

Section VIII. Exposure Controls/Personal Protection

Engineering Controls	For normal application, special ventilation is not necessary. If user's operations generate vapours or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit. Make-up air should always be supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection - Eyes	***The selection of personal protective equipment varies, depending upon conditions of use.*** Eye protection (i.e., safety glasses, safety goggles and/or face shield) should be determined based on conditions of use. If product is used in an application where splashing may occur, the use of safety goggles and/or a face shield should be considered.
Body	Wear appropriate clothing to prevent skin contact. As a minimum long sleeves and trousers should be worn.
Respiratory	Where concentrations in air may exceed the occupational exposure limits given in Section 2 (and those applicable to your area) and where engineering, work practices or other means of exposure reduction are not adequate, NIOSH approved respirators may be necessary to prevent overexposure by inhalation.
Hands	Wear appropriate chemically protective gloves. When handling hot product ensure gloves are heat resistant and insulated.
Feet	Wear appropriate footwear to prevent product from coming in contact with feet and skin.

Section IX. Physical and Chemical Properties

Physical State and Appearance	Viscous liquid.	**Viscosity**	21.1 cSt @ 40°C (104°F), 4.5 cSt @ 100°C (212°F), VI=127
Colour	Blue-green	**Pour Point**	<-54ºC
Odour	Hydrocarbon.	**Softening Point**	Not applicable.
Odour Threshold	Not available	**Dropping Point**	Not applicable.
Boiling Point	Not available	**Penetration**	Not applicable.
Density	0.88 kg/L @ 15°C (59°F).	**Oil / Water Dist. Coeff.**	Not available
Vapour Density	Not available	**Ionicity (in water)**	Not available
Vapour Pressure	Negligible at ambient temperature and pressure.	**Dispersion Properties**	Not available
Volatility	Non-volatile.	**Solubility**	Insoluble in water.

Section X. Stability and Reactivity

Corrosivity	Not available		
Stability	The product is stable under normal handling and storage conditions.	**Hazardous Polymerization**	Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Reactive with oxidizing agents, acids and reducing agents.	**Decomposition Products**	May release COx, NOx, methacrylate monomers, aldehydes, smoke and irritating vapours when heated to decomposition.

Continued on Next Page *Available in French*

Section XI. Toxicological Information

Routes of Entry	Skin contact, eye contact, inhalation and ingestion.
Acute Lethality	Based on toxicity of components. Acute oral toxicity (LD50): >5000 mg/kg (rat). Acute dermal toxicity (LD50): >2000 mg/kg (rabbit). Acute inhalation toxicity (LC50): >2500 mg/m³/4h (rat).
Chronic or Other Toxic Effects	
Dermal Route:	Prolonged or repeated contact may cause skin irritation characterized by dermatitis or oil acne.
Inhalation Route:	Negligible breathing hazard at normal temperatures (up to 38°C) or recommended blending temperatures. Elevated temperatures or mechanical action may form vapours, mists or fumes. Inhalation of oil mists or vapours from hot oil may cause irritation of the upper respiratory tract.
Oral Route:	Low toxicity; has laxative effect.
Eye Irritation/Inflammation:	Repeated or prolonged contact may cause transient irritation, but no permanent damage.
Immunotoxicity:	Not available
Skin Sensitization:	This product is not expected to be a skin sensitizer, based on the available data and the known hazards of the components.
Respiratory Tract Sensitization:	This product is not expected to be a respiratory tract sensitizer, based on the available data and the known hazards of the components.
Mutagenic:	Based on actual test results of base oils and results of similar products, severely hydrotreated base oils give negative results when tested for: (a) Salmonella Typhimurium TA98 using the Modified Ames Assay for Petroleum Product; (b) Salmonella-Escherichia coli/Mammalian-Microsome Reverse Mutation Assay (Ames test) with a Confirmatory Assay; (c) Structural Chromosomal Aberrations in Chinese Hamster Ovary (CHO) Cells.
Reproductive Toxicity:	This product is not expected to be a reproductive hazard, based on the available data and the known hazards of the components.
Teratogenicity/Embryotoxicity:	This product is not expected to be a teratogen or an embryotoxin, based on the available data and the known hazards of the components.
Carcinogenicity (ACGIH):	This product is not known to contain any chemicals at reportable quantities that are listed as A1 or A2 carcinogens by ACGIH.
Carcinogenicity (IARC):	This product is not known to contain any chemicals at reportable quantities that are listed as group 1, 2A or 2B carcinogens by IARC.
Carcinogenicity (NTP):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by NTP.
Carcinogenicity (IRIS):	Not available
Carcinogenicity (OSHA):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by OSHA.
Other Considerations	No additional remark.

Section XII. Ecological Information

Environmental Fate	Not available	**Persistance/ Bioaccumulation Potential**	Not available
BOD5 and COD	Not available	**Products of Biodegradation**	Not available
Additional Remarks	No additional remark.		

Section XIII. Disposal Considerations

Waste Disposal	Spent/used/waste oil may meet the requirements of a hazardous waste. Consult your local or regional authorities. Preferred waste management priorities are: (1) recycle or reprocess; (2) incineration with energy recovery; (3) disposal at licensed waste disposal facility. Ensure that disposal or reprocessing is in compliance with government requirements and local disposal regulations.

Section XIV. Transport Information

DOT Classification	Not a DOT controlled material (United States).	**Special Provisions for Transport**	Not applicable.

Section XV. Regulatory Information

Other Regulations	This product is acceptable for use under the provisions of WHMIS-CPR. All components of this formulation are listed on the CEPA-DSL (Domestic Substances List). All components of this formulation are listed on the US EPA-TSCA Inventory. All components of this product are on the European Inventory of Existing Commercial Chemical Substances (EINECS). This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

Continued on Next Page *Available in French*

Please contact Product Safety for more information.

DSD/DPD (EEC)	Not classified under the Dangerous Substances or Dangerous Preparations Directives.	**WHMIS (Canada)**	Not controlled
ADR (Europe) (Pictograms)		**TDG (Canada) (Pictograms)**	

Section XVI. Other Information

References Available upon request.
* Marque de commerce de Petro-Canada - Trademark

Glossary

ACGIH - American Conference of Governmental Industrial Hygienists
ADR - Agreement on Dangerous goods by Road (Europe)
ASTM - American Society for Testing and Materials (
BOD5 - Biological Oxygen Demand in 5 days
CAN/CGA B149.2 Propane Installation Code
CAS - Chemical Abstract Services
CEPA - Canadian Environmental Protection Act
CERCLA - Comprehensive Environmental Response, Compensation and Liability Act
CFR - Code of Federal Regulations
CHIP - Chemicals Hazard Information and Packaging Approved Supply List
COD5 - Chemical Oxygen Demand in 5 days
CPR - Controlled Products Regulations
DOT - Department of Transport
DSCL - Dangerous Substances Classification and Labeling (Europe)
DSD/DPD - Dangerous Substances or Dangerous Preparations Directives (Europe)
DSL - Domestic Substance List
EEC/EU - European Economic Community/European Union
EINECS - European Inventory of Existing Commercial Chemical Substances
EPCRA - Emergency Planning and Community Right to Know Act
FDA - Food and Drug Administration
FIFRA - Federal Insecticide, Fungicide and Rodenticide Act
HCS - Hazardous Communication System
HMIS - Hazardous Material Information System
IARC - International Agency for Research on Cancer
IRIS - Integrated Risk Information System
LD50/LC50 - Lethal Dose/Concentration kill 50%
LDLo/LCLo - Lowest Published Lethal Dose/Concentration
NAERG'96 - North American Emergency Response Guide Book (1996)
NFPA - National Fire Prevention Association
NIOSH - National Institute for Occupational Safety & Health
NPRI - National Pollutant Release Inventory
NSNR - New Substances Notification Regulations (Canada)
NTP - National Toxicology Program
OSHA - Occupational Safety & Health Administration
PEL - Permissible Exposure Limit
RCRA - Resource Conservation and Recovery Act
SARA - Superfund Amendments and Reorganization Act
SD - Single Dose
STEL - Short Term Exposure Limit (15 minutes)
TDG - Transportation Dangerous Goods (Canada)
TDLo/TCLo - Lowest Published Toxic Dose/Concentration
TLm - Median Tolerance Limit
TLV-TWA - Threshold Limit Value-Time Weighted Average
TSCA - Toxic Substances Control Act
USEPA - United States Environmental Protection Agency
USP - United States Pharmacopoeia
WHMIS - Workplace Hazardous Material Information System

For Copy of MSDS
Lubricants:
Western Canada, telephone: 1-800-661-1199; fax: (780) 464-9564
Ontario & Central Canada, telephone: 1-800-268-5850 and (905) 822-4222; fax: 1-800-201-6285
Quebec & Eastern Canada, telephone: 1-800-576-1686; fax: 800-201-6285

For Product Safety Information: (905) 804-4752

Prepared by Product Safety - TAR on 11/30/2001.

Data entry by Product Safety - JDW.

Safety Data Sheet

1. IDENTIFICATION

Product Identifier: WINDSHIELD WASHER CONC.
Date of Revision: January 22, 2021
Product Code: H544
Other Name(s): not applicable
Distributed By: not applicable
Recommended Use and Restrictions on Use: not available

Manufactured By: Ostrem Chemical Co. Ltd.
2310 - 80th Avenue NW
Edmonton, Alberta, Canada T6P 1N2
www.ostrem.com

Phone: 780-440-1911
In Case of Emergency Only, Phone
CANUTEC: 613-996-6666

2. HAZARDS IDENTIFICATION

Classification of the Mixture:
Acute Toxicity, Oral - Category 3
Acute Toxicity, Dermal - Category 3
Acute Toxicity, Inhalation - Category 3
Specific Target Organ Toxicity (Single Exposure) - Category 1
Flammable Liquids - Category 2

Label Elements:

Hazard Pictogram(s):

Signal Word: DANGER

Hazard Statement(s):
Toxic if swallowed.
Toxic if in contact with skin.
Toxic if inhaled.
Causes damage to organs (eyes and central nervous system).
Highly flammable liquid and vapour.

Precautionary Statement(s):

Prevention:
Use only outdoors or in a well-ventilated area.
Do not breathe fumes or vapours.
Wash hands thoroughly after handling.
Do not eat, drink or smoke when using this product.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Wear protective gloves, protective clothing, and eye/face protection.

Response:
IF SWALLOWED: Call a poison centre or physician.
Rinse mouth.
IF ON SKIN: Wash with plenty of water.
Call a poison centre or physician if you feel unwell.
Take off immediately all contaminated clothing and wash it before reuse.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Call a poison centre or physician.
If exposed or concerned: Call a poison centre or physician.

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

Disposal:
Dispose of contents/container in accordance with local/regional/national/international regulations.

Physical/health hazards not otherwise classified:
not applicable

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Conc.	CAS #	Common Names
methanol	80 - 100%	67-56-1	methyl alcohol

4. FIRST-AID MEASURES

Necessary Measures:

IF SWALLOWED: Call a poison centre or physician.
Rinse mouth.
IF ON SKIN: Wash with plenty of water.
Call a poison centre or physician if you feel unwell.
Take off immediately all contaminated clothing and wash it before reuse.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Call a poison centre or physician.
If exposed or concerned: Call a poison centre or physician.

Most important symptoms, both acute and delayed:

Toxic if swallowed.
Toxic if in contact with skin.
Toxic if inhaled.
Causes damage to organs (eyes and central nervous system).

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

not applicable

5. FIRE-FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media:

Use extinguishing media appropriate for surrounding fire.

Specific hazards arising from the chemical (e.g.: hazardous combustion products):

May liberate carbon monoxide, carbon dioxide.

Special protective equipment and precautions for firefighters:

As for surrounding fire. Firefighters should wear full protective clothing and self contained breathing equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:

Wear appropriate protective equipment. See section 8.

Environmental precautions:

Prevent from entering sewers, waterways or low areas.

Methods and materials for containment and cleaning up:

Isolate hazard area and restrict access. Small spills: soak up with inert absorbent material and scoop into containers. Large spills: prevent contamination of waterways. Dike and pump into suitable containers. Clean up residual with absorbent material, place in appropriate container and flush with water.

7. HANDLING AND STORAGE

Precautions for safe handling:

Use only outdoors or in a well-ventilated area.
Do not breathe fumes or vapours.
Wash hands thoroughly after handling.
Do not eat, drink or smoke when using this product.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not ingest. Avoid contact with eyes, skin and clothing.

Conditions for safe storage, including any incompatibilities:

Store in a well-ventilated place. Keep cool.
Keep container tightly closed.
Store locked up.
Keep out of reach of children. Store in a cool, dry area.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters - Exposure limits:

Ingredient:	Limit:
methanol	ACGIH TWA: 200 ppm STEL: 250 ppm

Appropriate engineering controls:

Provide exhaust ventilation to keep airborne levels below recommended exposure limits.

Respiratory protection:

If exposure exceeds occupational exposure limits, use an appropriate NIOSH approved respirator.

Other protection:

Wear protective gloves, protective clothing, and eye/face protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance (physical state, colour etc.):	clear blue liquid
Odour:	a pungent alcohol odour
Odour threshold:	not available
pH:	not applicable
Melting/Freezing point:	not available
Initial boiling point and range:	not available
Flash point:	12 C
Evaporation rate:	not available
Flammability (solid, gas):	not available
Upper/lower flammability or explosive limits:	not available
Vapour pressure:	not available
Vapour density:	not available
Relative density (specific gravity):	0.800
Solubility(ies):	complete
Partition co-efficient: n-octanol/water:	not available
Auto-ignition temperature:	not available
Decomposition temperature:	not available
Viscosity:	not available

10. STABILITY AND REACTIVITY

Reactivity:

This material is considered to be non-reactive under normal use conditions.

Chemical stability:

Stable.

Possibility of hazardous reactions:

not available

Conditions to avoid (e.g.: static discharge, shock or vibration):

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Incompatible materials:

Oxidizers

Hazardous decomposition products:

not available

11. TOXICOLOGICAL INFORMATION

POTENTIAL ACUTE HEALTH EFFECTS

Inhalation:	Toxic if inhaled.
Ingestion:	Toxic if swallowed.
Eye contact:	May cause eye irritation.
Skin contact:	Toxic if in contact with skin.
Skin absorption:	not available

POTENTIAL CHRONIC HEALTH EFFECTS

Inhalation: not available
Ingestion: not available
Eye contact: not available
Skin contact: not available
Skin absorption: not available

Mutagenicity: not available
Carcinogenicity: This information, if applicable, can be found in Section 2.
Reproductive toxicity: This information, if applicable, can be found in Section 2.
Sensitization of product: This information, if applicable, can be found in Section 2.
Specific Target Organ Toxicity - single exposure: This information, if applicable, can be found in Section 2.
Specific Target Organ Toxicity - repeated exposure: This information, if applicable, can be found in Section 2.

Toxicological Data:

Ingredient:	Data:
methanol	Oral LD50: 100 mg/kg (rat) Inhalation LC50: 5 mg/L (rat) Dermal LD50: 300 mg/kg (rabbit)

Other Toxicological Information on Ingredients:

12. ECOLOGICAL INFORMATION

Ecotoxicity (aquatic and terrestrial, where available): not available
Persistence and degradability: not available
Bioaccumulative potential: not available
Mobility in soil: not available
Other adverse effects: not available

Ecological Information on Ingredients: not available

13. DISPOSAL CONSIDERATIONS

Waste disposal: Disposal of all waste must be done according to local, provincial and federal regulations.

14. TRANSPORT INFORMATION

TDG classification: UN 1230; METHANOL; CLASS 3 (6.1); PG II

15. REGULATORY INFORMATION

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR.

16. PREPARATION INFORMATION

Prepared by: Technical Services Department, Ostrem Chemical Co. Ltd., Ph.: 780-440-1911

Date of Preparation: January 22, 2021
Date of Revision: January 22, 2021

End of Document

Winter Treat Plus

Safety Data Sheet

According to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012 and the Hazardous Products Regulations (HPR) WHMIS 2015

Date of issue: 03/08/2017 Revision date: 07/13/2021 Supersedes: 03/09/2020 Version: 2.3

SECTION 1: Identification

1.1. Identification

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 : Diesel fuel additive

1.3. Details of the supplier of the safety data sheet

Manufacturer
R.B. Howes & Co., Inc.
3511 North Ohio Street
Wichita, KS 67219 - USA
T 401-294-5500, 1-800 GET HOWES (438-4693)

Manufacturer
R.B. Howes & Co., Inc.
35 Regan Road
Brampton, ON L7A 1B2 - Canada
T 401-294-5500, 1-800 GET HOWES (438-4693)

1.4. Emergency telephone number

Emergency number : CHEMTREC 1 (800) 424-9300 / 703-527-3887

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

GHS classification

Flam. Liq. 3
Skin Irrit. 2
Carc. 2
Repr. 2
Asp. Tox. 1

2.2. Label elements

GHS labelling

Hazard pictograms (GHS) :

GHS02 GHS07 GHS08

Signal word (GHS) : Danger

Hazard statements (GHS) : Flammable liquid and vapour. Causes skin irritation. Suspected of causing cancer. Suspected of damaging fertility or the unborn child. May be fatal if swallowed and enters airways

Precautionary statements (GHS) : 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, lighting, ventilating equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Wash hands thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. If swallowed: Immediately call a doctor. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Take off contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical advice/attention. If exposed or concerned: Get medical advice/attention. Store in a well-ventilated place. Keep cool. Store locked up. Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%
Stoddard solvent	(CAS-No.) 8052-41-3	15 - 40
Distillates, petroleum, hydrotreated light naphthenic	(CAS-No.) 64742-53-6	10 - 30
Petroleum distillates, hydrotreated light	(CAS-No.) 64742-47-8	10 - 30
Solvent naphtha, petroleum, light aromatic	(CAS-No.) 64742-95-6	7 - 13
Benzene, 1,2,4-trimethyl-	(CAS-No.) 95-63-6	5 - 10
Solvent naphtha, petroleum, heavy aromatic	(CAS-No.) 64742-94-5	1 - 5
Xylenes (o-, m-, p- isomers)	(CAS-No.) 1330-20-7	1 - 5
1,3,5-Trimethylbenzene	(CAS-No.) 108-67-8	0.5 - 1.5
1,2,3-Trimethylbenzene	(CAS-No.) 526-73-8	0.5 - 1.5
Nonane	(CAS-No.) 111-84-2	0.5 - 1.5
Naphthalene	(CAS-No.) 91-20-3	0.5 - 1.5
Ethylbenzene	(CAS-No.) 100-41-4	0.1 - 1
Isopropylbenzene	(CAS-No.) 98-82-8	0.1 - 1

***Chemical name, CAS number and/or exact concentration have been withheld as a trade secret**

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.

First-aid measures after skin contact : IF ON SKIN: Wash with plenty of water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical advice/attention.

First-aid measures after 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.

First-aid measures after ingestion : IF SWALLOWED: immediately call a POISON CENTER or doctor/physician. Do NOT induce vomiting. Never give anything by mouth to an unconscious person.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects after inhalation : May cause irritation to the respiratory tract.

Symptoms/effects after skin contact : Causes skin irritation. Symptoms may include redness, drying, defatting and cracking of the skin.

Symptoms/effects after eye contact : May cause eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with possible redness and swelling.

Symptoms/effects 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 be delayed. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

SECTION 5: Fire-fighting measures

5.1. Extinguishing media

Suitable extinguishing media : Foam. Carbon dioxide. Water spray or fog.

Unsuitable extinguishing media : Do not use water jet.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Flammable liquid and vapour. Products of combustion may include, and are not limited to: oxides of carbon.

Explosion hazard : May form flammable/explosive vapour-air mixture.

Reactivity : No dangerous reactions known under normal conditions of use.

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). Cool down the containers exposed to heat with a water spray.

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. Use special care to avoid static electric charges.

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent entry to sewers and public waters.

6.3. Methods and material for containment and cleaning up

For containment : Absorb and/or contain spill with inert material (sand, vermiculite or other appropriate material), then place in suitable container. Do not flush into surface water or sewer system. Wear recommended personal protective equipment.

Methods for cleaning up : Sweep or shovel spills into appropriate container for disposal. Provide ventilation. Spilled material may present a slipping hazard.

6.4. 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

Additional hazards when processed : Handle empty containers with care because residual vapours are flammable.

Precautions for safe handling : Keep away from sources of ignition - No smoking. Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Avoid contact with skin and eyes. Avoid breathing vapour or mist. 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 : Wash contaminated clothing before reuse. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Proper grounding procedures to avoid static electricity should be followed.

Storage conditions : Keep out of the reach of children. Keep container tightly closed. Store locked up. Store in a well-ventilated place. Keep cool.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Stoddard solvent (8052-41-3)		
ACGIH	ACGIH TWA (ppm)	100 ppm
ACGIH	Remark (ACGIH)	Eye, skin, & kidney dam;
OSHA	OSHA PEL (TWA) (mg/m³)	2900 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	500 ppm
IDLH	US IDLH (mg/m³)	20000 mg/m³
NIOSH	NIOSH REL (TWA) (mg/m³)	350 mg/m³
NIOSH	NIOSH REL (ceiling) (mg/m³)	1800 mg/m³

Distillates, petroleum, hydrotreated light naphthenic (64742-53-6)
Not applicable

Petroleum distillates, hydrotreated light (64742-47-8)
Not applicable

Solvent naphtha, petroleum, light aromatic (64742-95-6)
Not applicable

Benzene, 1,2,4-trimethyl- (95-63-6)		
NIOSH	NIOSH REL (TWA) (mg/m³)	125 mg/m³
NIOSH	NIOSH REL (TWA) (ppm)	25 ppm

Solvent naphtha, petroleum, heavy aromatic (64742-94-5)
Not applicable

Xylenes (o-, m-, p- isomers) (1330-20-7)		
ACGIH	ACGIH TWA (ppm)	100 ppm
ACGIH	ACGIH STEL (ppm)	150 ppm
ACGIH	Remark (ACGIH)	URT & eye irr; CNS impair
OSHA	OSHA PEL (TWA) (mg/m³)	435 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	100 ppm

1,2,3-Trimethylbenzene (526-73-8)		
NIOSH	NIOSH REL (TWA) (mg/m³)	125 mg/m³
NIOSH	NIOSH REL (TWA) (ppm)	25 ppm

1,3,5-Trimethylbenzene (108-67-8)		
NIOSH	NIOSH REL (TWA) (mg/m³)	125 mg/m³
NIOSH	NIOSH REL (TWA) (ppm)	25 ppm

Nonane (111-84-2)		
ACGIH	ACGIH TWA (ppm)	200 ppm
NIOSH	NIOSH REL (TWA) (mg/m³)	1050 mg/m³
NIOSH	NIOSH REL (TWA) (ppm)	200 ppm

Naphthalene (91-20-3)		
ACGIH	ACGIH TWA (ppm)	10 ppm
OSHA	OSHA PEL (TWA) (mg/m³)	50 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	10 ppm
IDLH	US IDLH (ppm)	250 ppm
NIOSH	NIOSH REL (TWA) (mg/m³)	50 mg/m³
NIOSH	NIOSH REL (TWA) (ppm)	10 ppm
NIOSH	NIOSH REL (STEL) (mg/m³)	75 mg/m³
NIOSH	NIOSH REL (STEL) (ppm)	15 ppm

Ethylbenzene (100-41-4)		
ACGIH	ACGIH TWA (ppm)	20 ppm
ACGIH	Remark (ACGIH)	URT irr; kidney dam (nephropathy)
OSHA	OSHA PEL (TWA) (mg/m³)	435 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	100 ppm
IDLH	US IDLH (ppm)	800 ppm (10% LEL)
NIOSH	NIOSH REL (TWA) (mg/m³)	435 mg/m³
NIOSH	NIOSH REL (TWA) (ppm)	100 ppm
NIOSH	NIOSH REL (STEL) (mg/m³)	545 mg/m³
NIOSH	NIOSH REL (STEL) (ppm)	125 ppm

Isopropylbenzene (98-82-8)		
ACGIH	ACGIH TWA (ppm)	50 ppm
ACGIH	Remark (ACGIH)	Lung cancer; liver and lung dam; A2 (Suspected Human Carcinogen: Human data are accepted as adequate in quality but are conflicting or insufficient to classify the agent as a confirmed human carcinogen; OR, the agent is carcinogenic in experimental animals at dose(s), by route(s) of exposure, at site(s), of histologic type(s), or by mechanism(s) considered relevant to worker exposure. The A2 is used primarily when there is limited evidence or carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals with relevance to humans)

Isopropylbenzene (98-82-8)		
OSHA	OSHA PEL (TWA) (mg/m³)	245 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	50 ppm
IDLH	US IDLH (ppm)	900 ppm (10% LEL)
NIOSH	NIOSH REL (TWA) (mg/m³)	245 mg/m³
NIOSH	NIOSH REL (TWA) (ppm)	50 ppm

8.2. Exposure controls

Appropriate engineering controls : Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, etc.) below recommended exposure limits. Ensure good ventilation of the work station.

Hand protection : Wear suitable gloves resistant to chemical penetration.

Eye protection : Safety glasses or goggles are recommended when using product.

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 : Avoid release to the environment.

Other information : Handle in accordance with good industrial hygiene and safety procedures. Do not eat, drink or smoke when using this product.

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 : 164 °C (327 °F)

Flash point : ≥ 54.4 °C (≥ 130 °F) [Closed cup]

Relative evaporation rate (butylacetate=1) : No data available

Flammability (solid, gas) : Flammable liquid and vapour

Vapour pressure : < 0.1 mm Hg

Relative vapour density at 20 °C : > 1 (air = 1)

Relative density : < 0.9 (water = 1)

Solubility : Insoluble

Partition coefficient n-octanol/water : No data available

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Viscosity, kinematic : 9.494 cSt @ 40 °C (104 °F)

Viscosity, dynamic : No data available

Explosive limits : No data available

Explosive properties : No data available

Oxidising properties : No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No dangerous reactions known under normal conditions of use.

10.2. Chemical stability

Stable under normal conditions. May form flammable/explosive vapour-air mixture.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Sources of ignition. Heat. Incompatible materials. Direct sunlight.

10.5. Incompatible materials

Strong oxidizers.

10.6. Hazardous decomposition products

May include, and are not limited to: oxides of carbon. May release flammable gases.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified.
Acute toxicity (dermal) : Not classified.
Acute toxicity (inhalation) : Not classified.

Distillates, petroleum, hydrotreated light naphthenic (64742-53-6)	
LD50 oral rat	> 5000 mg/kg
LD50 dermal rabbit	> 2000 mg/kg
LC50 inhalation rat	2180 mg/m³ (Exposure time: 4 h)

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/m³ (Exposure time: 4 h)

Solvent naphtha, petroleum, heavy aromatic (64742-94-5)	
LD50 oral rat	> 5000 mg/kg
LD50 dermal rabbit	> 2 ml/kg
LC50 inhalation rat	> 590 mg/m³ (Exposure time: 4 h)

Xylenes (o-, m-, p- isomers) (1330-20-7)	
LD50 oral rat	3500 mg/kg
LD50 dermal rabbit	> 4350 mg/kg
LD50 dermal	1700 mg/kg
LC50 inhalation rat	29.08 mg/l/4h
LC50 inhalation rat (Vapours - mg/l/4h)	27.57 mg/l/4h

1,3,5-Trimethylbenzene (108-67-8)	
LC50 inhalation rat	24 g/m³ (Exposure time: 4 h)

Nonane (111-84-2)	
LC50 inhalation rat	3200 ppm/4h

Naphthalene (91-20-3)	
LD50 oral rat	1110 mg/kg
LD50 dermal rabbit	1120 mg/kg
LC50 inhalation rat	> 340 mg/m³ (Exposure time: 1 h)

Ethylbenzene (100-41-4)	
LD50 oral rat	3500 mg/kg
LD50 dermal rabbit	15400 mg/kg
LC50 inhalation rat	17.4 mg/l/4h

Isopropylbenzene (98-82-8)	
LD50 oral rat	1400 mg/kg
LD50 dermal rabbit	12300 µl/kg
LC50 inhalation rat	> 3577 ppm (Exposure time: 6 h)

Skin corrosion/irritation : Causes skin irritation.
Serious eye damage/irritation : Not classified.
Respiratory or skin sensitisation : Not classified.
Germ cell mutagenicity : Not classified.
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
In OSHA Hazard Communication Carcinogen list	Yes

Ethylbenzene (100-41-4)	
IARC group	2B - Possibly carcinogenic to humans
National Toxicology Program (NTP) Status	1 - Evidence of Carcinogenicity
In OSHA Hazard Communication Carcinogen list	Yes

Isopropylbenzene (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
In OSHA Hazard Communication Carcinogen list	Yes

Reproductive toxicity : Suspected of damaging fertility or the unborn child.
STOT-single exposure : Not classified.

Solvent naphtha, petroleum, light aromatic (64742-95-6)	
STOT-single exposure	May cause drowsiness or dizziness.

Xylenes (o-, m-, p- isomers) (1330-20-7)	
STOT-single exposure	May cause drowsiness or dizziness.

STOT-repeated exposure : Not classified.
Aspiration hazard : May be fatal if swallowed and enters airways.

Winter Treat Plus	
Viscosity, kinematic (calculated value)	< 20.5 mm²/s @ 40 °C (104 °F)

Symptoms/effects after inhalation : May cause irritation to the respiratory tract.
Symptoms/effects after skin contact : Causes skin irritation. Symptoms may include redness, drying, defatting and cracking of the skin.
Symptoms/effects after eye contact : May cause eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with possible redness and swelling.
Symptoms/effects 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.

Distillates, petroleum, hydrotreated light naphthenic (64742-53-6)	
LC50 fish 1	> 5000 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss)
EC50 Daphnia 1	> 1000 mg/l (Exposure time: 48 h - Species: Daphnia magna)

Petroleum distillates, hydrotreated light (64742-47-8)	
LC50 fish 1	45 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])

Petroleum distillates, hydrotreated light (64742-47-8)	
LC50 fish 2	2.2 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])

Solvent naphtha, petroleum, light aromatic (64742-95-6)	
LC50 fish 1	9.22 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss)
EC50 Daphnia 1	6.14 mg/l (Exposure time: 48 h - Species: Daphnia magna)

Benzene, 1,2,4-trimethyl- (95-63-6)	
LC50 fish 1	7.19 - 8.28 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
EC50 Daphnia 1	6.14 mg/l (Exposure time: 48 h - Species: Daphnia magna)

Solvent naphtha, petroleum, heavy aromatic (64742-94-5)	
LC50 fish 1	19 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
EC50 Daphnia 1	0.95 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 fish 2	2.34 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss)

Xylenes (o-, m-, p- isomers) (1330-20-7)	
LC50 fish 1	13.4 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
EC50 Daphnia 1	3.82 mg/l (Exposure time: 48 h - Species: water flea)
LC50 fish 2	2.661 - 4.093 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [static])
EC50 Daphnia 2	0.6 mg/l (Exposure time: 48 h - Species: Gammarus lacustris)

1,3,5-Trimethylbenzene (108-67-8)	
LC50 fish 1	3.48 mg/l (Exposure time: 96 h - Species: Pimephales promelas)

Naphthalene (91-20-3)	
LC50 fish 1	5.74 - 6.44 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
EC50 Daphnia 1	2.16 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 fish 2	1.6 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through])
EC50 Daphnia 2	1.96 mg/l (Exposure time: 48 h - Species: Daphnia magna [Flow through])

Ethylbenzene (100-41-4)	
LC50 fish 1	11.0 - 18.0 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [static])
EC50 Daphnia 1	1.8 - 2.4 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 fish 2	4.2 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [semi-static])
NOEC chronic crustacea	0.956 mg/l

Isopropylbenzene (98-82-8)	
LC50 fish 1	6.04 - 6.61 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
EC50 Daphnia 1	0.6 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 fish 2	4.8 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through])
EC50 Daphnia 2	7.9 - 14.1 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])

12.2. Persistence and degradability

Winter Treat Plus	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

Winter Treat Plus	
Bioaccumulative potential	Not established.

Petroleum distillates, hydrotreated light (64742-47-8)	
BCF fish 1	61 - 159

Benzene, 1,2,4-trimethyl- (95-63-6)	
Partition coefficient n-octanol/water	3.63

Solvent naphtha, petroleum, heavy aromatic (64742-94-5)	
BCF fish 1	61 – 159
Partition coefficient n-octanol/water	2.9 – 6.1

Xylenes (o-, m-, p- isomers) (1330-20-7)	
BCF fish 1	0.6 - 15
Partition coefficient n-octanol/water	2.77 - 3.15

Naphthalene (91-20-3)	
BCF fish 1	30 - 430
Partition coefficient n-octanol/water	3.6

Ethylbenzene (100-41-4)	
BCF fish 1	15
Partition coefficient n-octanol/water	3.2

Isopropylbenzene (98-82-8)	
BCF fish 1	35.5
Partition coefficient n-octanol/water	3.7

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on the global warming : No known effects from this product.

Other information : No other effects known.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product/Packaging disposal recommendations : Dispose in a safe manner in accordance with local/national regulations.

Additional information : Handle empty containers with care because residual vapours are flammable.

SECTION 14: Transport information

Department of Transportation (DOT) and Transportation of Dangerous Goods (TDG)

In accordance with DOT/TDG

UN-No.(DOT/TDG) : UN1268

Proper Shipping Name (DOT/TDG) : Petroleum distillates, n.o.s.

Class (DOT/TDG) : Class 3 - Flammable and combustible liquid 49 CFR 173.120

Packing group (DOT/TDG) : III

Transport by sea

This product is currently not packaged to comply with IMDG regulations. It is not intended to be shipped by sea.

Transport by air

This product is currently not packaged to comply with IATA regulations. It is not intended to be shipped by air.

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)
Subject to reporting requirements of United States SARA Section 313

Xylenes (o-, m-, p- isomers) (1330-20-7)	
Subject to reporting requirements of United States SARA Section 313 Listed on EPA Hazardous Air Pollutant (HAPS)	
CERCLA RQ	100 lb

Nonane (111-84-2)	
EPA TSCA Regulatory Flag	T - T - indicates a substance that is the subject of a final TSCA section 4 test rule.

Naphthalene (91-20-3)	
Subject to reporting requirements of United States SARA Section 313 Listed on EPA Hazardous Air Pollutant (HAPS)	
EPA TSCA Regulatory Flag	T - T - indicates a substance that is the subject of a final TSCA section 4 test rule.
CERCLA RQ	100 lb

Ethylbenzene (100-41-4)	
Subject to reporting requirements of United States SARA Section 313 Listed on EPA Hazardous Air Pollutant (HAPS)	
EPA TSCA Regulatory Flag	T - T - indicates a substance that is the subject of a final TSCA section 4 test rule.
CERCLA RQ	1000 lb

Isopropylbenzene (98-82-8)	
Subject to reporting requirements of United States SARA Section 313 Listed on EPA Hazardous Air Pollutant (HAPS)	
CERCLA RQ	5000 lb

All components of this product are listed, or excluded from listing, on the Canadian DSL (Domestic Substances List) and NDSL (Non-Domestic Substances List) inventories.

15.2. International regulations

No additional information available

15.3. US State regulations

⚠ **WARNING:** This product can expose you to Naphthalene, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

Component	State or local regulations
Benzene, 1,2,4-trimethyl-(95-63-6)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List; U.S. - Pennsylvania - RTK (Right to Know) List
Xylenes (o-, m-, p- isomers)(1330-20-7)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List; U.S. - Pennsylvania - RTK (Right to Know) List
1,3,5-Trimethylbenzene(108-67-8)	U.S. - Massachusetts - Right To Know List
Nonane(111-84-2)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List
Naphthalene(91-20-3)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List; U.S. - Pennsylvania - RTK (Right to Know) List
Ethylbenzene(100-41-4)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List; U.S. - Pennsylvania - RTK (Right to Know) List
Isopropylbenzene(98-82-8)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List; U.S. - Pennsylvania - RTK (Right to Know) List
Distillates, petroleum, hydrotreated light naphthenic(64742-53-6)	U.S. - Massachusetts - Right To Know List
Stoddard solvent(8052-41-3)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16: Other information

Revision date : 07/13/2021

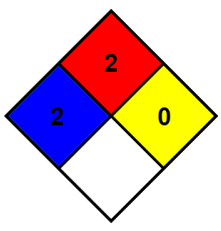
Other information : None.

Prepared by : Nexreg Compliance Inc.
www.Nexreg.com

NFPA health hazard : 2

NFPA fire hazard : 2

NFPA reactivity : 0



Indication of changes:
Disclosure.
07/13/2021: Logo (Howes)

SDS HazCom 2012 - WHMIS 2015 (NexReg) - Section 15

SAFETY DATA SHEET

1. Identification

Product identifier **Chain and Wire Rope Lubricant - 10 oz**

Other means of identification

Product Code No. 03050 (Item# 1003306)

Recommended use Lubricant

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)

Website www.crcindustries.com

2. Hazard(s) identification

Physical hazards	Flammable aerosols	Category 1
	Gases under pressure	Liquefied gas
Health hazards	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2B
	Reproductive toxicity	Category 2
	Specific target organ toxicity, single exposure	Category 3 narcotic effects
	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. May be fatal if swallowed and enters airways. Causes skin irritation. Causes eye irritation. May cause drowsiness or dizziness. Suspected of damaging fertility or the unborn child.

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. 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 outdoors or in a well-ventilated area. 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/vapors. Wash thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.
Response	If swallowed: Immediately call a poison center/doctor. Do NOT induce vomiting. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. If on skin: Wash with plenty of water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. If exposed or concerned: Get medical advice/attention.
Storage	Store in a well-ventilated place. Keep container tightly closed. 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/international regulations.
Hazard(s) not otherwise classified (HNOC)	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
naphtha (petroleum), hydrotreated light		64742-49-0	50 - 60
liquefied petroleum gas		68476-86-8	20 - 30
2-methylpentane		107-83-5	10 - 20
acrylic copolymer		Proprietary	3 - 10
n-hexane		110-54-3	0.5 - 5
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based		72623-86-0	0.5 - 1.5
white mineral oil		8042-47-5	0.5 - 1.5
distillates (petroleum), hydrotreated heavy naphthenic		64742-52-5	≤ 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	Remove contaminated clothing. Wash with plenty of soap and water. 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.
Most important symptoms/effects, acute and delayed	Aspiration may cause pulmonary edema and pneumonitis. May cause drowsiness or dizziness. Headache. Nausea, vomiting. Irritation of eyes. Exposed individuals may experience eye tearing, redness, and discomfort. 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. Show this safety data sheet to the doctor in attendance.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. 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. Use standard firefighting procedures and consider the hazards of other involved materials. In the event of fire and/or explosion do not breathe fumes.
Specific methods	Use standard firefighting procedures and consider the hazards of other involved materials. In the event of fire and/or explosion do not breathe fumes.
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 gases 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/vapors. 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. 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	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/vapors. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. 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. Avoid release to the environment. Observe good industrial hygiene practices. For product usage instructions, 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 tightly closed container. Store in a well-ventilated place. Stored containers should be periodically checked for general condition and leakage. 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
distillates (petroleum), hydrotreated heavy naphthenic (CAS 64742-52-5)	PEL	5 mg/m3	Mist.
		2000 mg/m3	
		500 ppm	
naphtha (petroleum), hydrotreated light (CAS 64742-49-0)	PEL	400 mg/m3	
		100 ppm	
n-hexane (CAS 110-54-3)	PEL	1800 mg/m3	
		500 ppm	
white mineral oil (CAS 8042-47-5)	PEL	5 mg/m3	Mist.

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
2-methylpentane (CAS 107-83-5)	STEL	1000 ppm	
	TWA	500 ppm	
distillates (petroleum), hydrotreated heavy naphthenic (CAS 64742-52-5)	TWA	5 mg/m3	Inhalable fraction.
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based (CAS 72623-86-0)	TWA	5 mg/m3	Inhalable fraction.
n-hexane (CAS 110-54-3)	TWA	50 ppm	
white mineral oil (CAS 8042-47-5)	TWA	5 mg/m3	Inhalable fraction.

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
2-methylpentane (CAS 107-83-5)	Ceiling	1800 mg/m3	
		510 ppm	
	TWA	350 mg/m3	
		100 ppm	
distillates (petroleum), hydrotreated heavy naphthenic (CAS 64742-52-5)	Ceiling	1800 mg/m3	
	STEL	10 mg/m3	Mist.
	TWA	5 mg/m3	Mist.
naphtha (petroleum), hydrotreated light (CAS 64742-49-0)	TWA	400 mg/m3	
		100 ppm	
n-hexane (CAS 110-54-3)	TWA	180 mg/m3	
		50 ppm	
white mineral oil (CAS 8042-47-5)	STEL	10 mg/m3	Mist.

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value	Form
	TWA	5 mg/m3	Mist.

Biological limit values

ACGIH Biological Exposure Indices

Components	Value	Determinant	Specimen	Sampling Time
n-hexane (CAS 110-54-3)	0.5 mg/l	2,5-Hexanedione, without hydrolysis	Urine	*

* - For sampling details, please see the source document.

Exposure guidelines

US - California OELs: Skin designation

n-hexane (CAS 110-54-3) Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

n-hexane (CAS 110-54-3) Danger of cutaneous absorption

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. Provide eyewash station.

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. Viton/butyl.

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 eat, drink or 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 Green.

Odor Mild solvent.

Odor threshold Not available.

pH Not available.

Melting point/freezing point < -76 °F (< -60 °C)

Initial boiling point and boiling range 118.4 °F (48 °C) estimated

Flash point < 0 °F (< -17.8 °C)

Evaporation rate Very fast.

Flammability (solid, gas) Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) 1 % estimated

Flammability limit - upper (%) 8 % estimated

Vapor pressure Not available.

Vapor density > 1 (air = 1)

Relative density	0.64 estimated
Solubility(ies)	
Solubility (water)	Negligible.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	489.2 °F (254 °C) estimated
Decomposition temperature	Not available.
Viscosity	Not available.
Percent volatile	93.7 % 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. Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	Carbon oxides. Hydrocarbon fumes and smoke. Aldehydes.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause drowsiness or dizziness. Headache. Nausea, vomiting. Prolonged inhalation may be harmful.
Skin contact	Causes skin irritation.
Eye contact	Causes eye 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	Aspiration may cause pulmonary edema and pneumonitis. May cause drowsiness or dizziness. Headache. Nausea, vomiting. Irritation of eyes. Exposed individuals may experience eye tearing, redness, and discomfort. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity May be fatal if swallowed and enters airways.

Components	Species	Test Results
distillates (petroleum), hydrotreated heavy naphthenic (CAS 64742-52-5)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg
Oral		
LD50	Rat	> 5000 mg/kg
naphtha (petroleum), hydrotreated light (CAS 64742-49-0)		
Acute		
Dermal		
LD50	Rat	> 2000 mg/kg
Inhalation		
Vapor		
LC50	Rat	> 5.2 mg/l, 4 hours
Oral		
LD50	Rat	> 5000 mg/kg
n-hexane (CAS 110-54-3)		
Acute		
Dermal		
LD50	Rabbit	> 1300 mg/kg

Components	Species	Test Results
Oral		
LD50	Rat	15840 mg/kg

Skin corrosion/irritation Causes skin irritation.

Serious eye damage/eye irritation Causes eye irritation.

Respiratory or skin sensitization

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 Not classifiable as to carcinogenicity to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based (CAS 72623-86-0)	3 Not classifiable as to carcinogenicity to humans.
white mineral oil (CAS 8042-47-5)	3 Not classifiable as to carcinogenicity to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity Suspected of damaging fertility or the unborn child.

Specific target organ toxicity - single exposure May cause drowsiness or dizziness.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard May be fatal if swallowed and enters airways.

Chronic effects Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity Toxic to aquatic life with long lasting effects.

Components		Species	Test Results
n-hexane (CAS 110-54-3)			
Aquatic			
Acute			
Fish	LC50	Fathead minnow (Pimephales promelas)	2500 µg/l, 96 hours

Persistence and degradability No data is available on the degradability of any ingredients in the mixture.

Bioaccumulative potential

Partition coefficient n-octanol / water (log Kow)

2-methylpentane	3.21
n-hexane	3.9

Bioconcentration factor (BCF)

naphtha (petroleum), hydrotreated light	10 - 2500
n-hexane	501.187

Mobility in soil No data available.

Other adverse effects The product contains volatile organic compounds which have a photochemical ozone creation potential.

13. Disposal considerations

Disposal instructions 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. Incinerate the material under controlled conditions in an approved incinerator. Do not incinerate sealed containers. 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, Limited Quantity
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Label(s)	2.1
Packing group	-
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

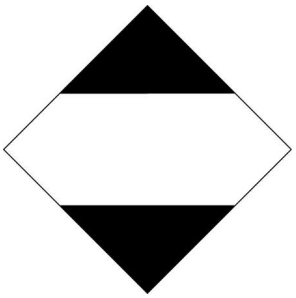
IATA

UN number	UN1950
UN proper shipping name	Aerosols, flammable, Limited Quantity
Transport hazard class(es)	
Class	2.1
Subsidiary risk	-
Packing group	-
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	2.1
Subsidiary risk	-
Packing group	-
Environmental hazards	
Marine pollutant	Yes, but exempt from the regulations.
EmS	F-D, S-U
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

DOT; IMDG



IATA

15. Regulatory information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

n-hexane (CAS 110-54-3)

CERCLA Hazardous Substances: Reportable quantity

n-hexane (CAS 110-54-3)	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.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

n-hexane (CAS 110-54-3)

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)

Classified hazard categories

Flammable (gases, aerosols, liquids, or solids)
Gas under pressure
Skin corrosion or irritation
Serious eye damage or eye irritation
Reproductive toxicity
Specific target organ toxicity (single or repeated exposure)
Aspiration hazard

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
n-hexane	110-54-3	0.5 - 5

US state regulations

US. New Jersey Worker and Community Right-to-Know Act

2-methylpentane (CAS 107-83-5)
naphtha (petroleum), hydrotreated light (CAS 64742-49-0)
n-hexane (CAS 110-54-3)

US. Massachusetts RTK - Substance List

2-methylpentane (CAS 107-83-5)

naphtha (petroleum), hydrotreated light (CAS 64742-49-0)
n-hexane (CAS 110-54-3)
white mineral oil (CAS 8042-47-5)

US. Pennsylvania Worker and Community Right-to-Know Law

2-methylpentane (CAS 107-83-5)
naphtha (petroleum), hydrotreated light (CAS 64742-49-0)
n-hexane (CAS 110-54-3)
white mineral oil (CAS 8042-47-5)

US. Rhode Island RTK

distillates (petroleum), hydrotreated heavy naphthenic (CAS 64742-52-5)
naphtha (petroleum), hydrotreated light (CAS 64742-49-0)
n-hexane (CAS 110-54-3)
white mineral oil (CAS 8042-47-5)

California Proposition 65

WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov

California Proposition 65 - CRT: Listed date/Carcinogenic substance

ethylbenzene (CAS 100-41-4) Listed: June 11, 2004

California Proposition 65 - CRT: Listed date/Developmental toxin

toluene (CAS 108-88-3) Listed: January 1, 1991

California Proposition 65 - CRT: Listed date/Male reproductive toxin

n-hexane (CAS 110-54-3) Listed: December 15, 2017

US. California. Candidate Chemicals List. Safer Consumer Products Regulations (Cal. Code Regs, tit. 22, 69502.3, subd. (a))

distillates (petroleum), hydrotreated heavy naphthenic (CAS 64742-52-5)
lubricating oils (petroleum), C15-30, hydrotreated neutral oil-based (CAS 72623-86-0)
naphtha (petroleum), hydrotreated light (CAS 64742-49-0)
n-hexane (CAS 110-54-3)
white mineral oil (CAS 8042-47-5)

Volatile organic compounds (VOC) regulations

EPA

VOC content (40 CFR 51.100(s))	92.1 %
Consumer products (40 CFR 59, Subpt. C)	Not regulated

State

Consumer products	This product is regulated as a Gear, Chain or Wire Lubricant (aerosol). This product is not compliant to be sold for use in California. This product is compliant in all other states.
VOC content (CA)	92.1 %
VOC content (OTC)	92.1 %

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Industrial Chemicals (AICIS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
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	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes

Country(s) or region	Inventory name	On inventory (yes/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	03-30-2021
Prepared by	Allison Yoon
Version #	01
Further information	CRC # 572B-E/1008119-1002594
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's 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, Inc..
Revision information	This document has undergone significant changes and should be reviewed in its entirety.

APPENDIX D

Spill Response Trailer Inventory

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SRT10000 - Inventory Checklist Page 1

Location	Tote	Item	Qty	Date Verified /Who
		Example **P6** **P**6 = **D**river versus **P**assenger Side P**6** = Shelf Sequence from bottom to top **DR** = **D**river side **R**ear		
D1		Can Potable Water 5g	1	
	Tote 1	TyChem 2000 Suit 4XL TyVek 400 Suit XL Tychem 2000 Tape	24 25 4	
	Tote 2	TyVek 400 Suit 4XL TyVek 400 Suit 2XL TyVek 400 Suit XL	25 50 25	
	Tote 3	TyVek 400 Suit 3XL TyVek 400 Suit 3XL	50 25	
D2		Reserved for SCBA		
D3	**Tote 4**	TyChem 2000 Suit XL TyChem 2000 Suit 2XL Tychem 2000 Tape	24 12 4	
	Tote 5	TyChem 2000 Suit 2XL TyChem 2000 Suit 3XL Tychem 2000 Tape	12 24 4	
	Tote 6	Gloves Leather Gloves Nitrile 22mil Ear Plugs Gloves PVC/Nitrile 22mil Gloves Nitrile 8mil 50	6 18 164 18 3	

		N95 Masks APR Cartridge Defender	30 6	
		Shop Towels Blue Roll 10	2	
D4		Pad Oil Bundle	8	
		Shop Towels Blue Roll 10	2	
D5	**Tote 7**	Rubber Boots 11 Rubber Boots 12 Rubber Boots 13 Rainsuit M Rainsuit L Rainsuit XL Rainsuit 2XL Rainsuit 3XL	3 2 1 1 1 1 2 1	
	Tote 8	Oil Pillow 18”x18”	10	
	Tote 9	HazMat Pillow 18”x18”	10	
D6	**Tote 10**	HiViz Vest L/XL HiViz Vest 2X/3XL HiViz Vest 4X/5XL Tape Danger Tape Caution Duct Tape Yellow Duct Tape Red Flagging tape R/Y/B/G Orange Marking Paint	1 3 2 2 2 2 2 10	
	Tote 11	Storm Drain Boom 5” x 15”	20	
	Tote 12	Socks Oil 3” x 48”	20	
D7		Boom Oil 510	16	
D8		Pad Oil Bundle	8	
		Ratchet Strap 1500	8	

		Ratchet Strap 500	2	
		Bag Disposal Roll Yellow	1	
D9		Oil Gator Absorbent	6	
		Gasoline Can 5g	2	
D10	**Tote 13**	Pail with: Plug-n-Dyke Wax Sealant Gloves Nitrile 8mil Spreader Felting Ratchet Strap 500	3 2	
	Tote 14	Decon: Hose Pink Hose Orange Hose Green Hose Blue Distribution Manifold Footvalve Strainer Funnel Wand Extension Scrubbing Brushes various	 1 1 1 1 1 1 1 1 1	
		Hose Discharge Lie-flat 2" x 50'	6	
		Sprayer 2g	2	
		Sprayer Backpack	1	
		Toolbelt	1	
D11		Boom Oil 510	16	
D12		Pad Oil Bundle	8	
		Pad Universal Bundle	8	
P1		Air Compressor	1	

P1		Wheel Chocks	4	
	Tote 15	Eye Goggles Air tool oil Cutting Fluid Air Blow Gun Air Hose Hole Saw Kit Drill Bits Air Drill Air Accessory kit	2 1 2 1 1 1 1 1 1	
	Tote 16	Rope ⅜ x 100' Rope ½ x 200' Shackle ½ Shackle ¾ Snatch Block	4 1 10 2 2	
P2	**Tote 17**	Oil Pillow 18" x 18"	10	
	Tote 18	Oil Pillow 18" x 18"	10	
	Tote 19	Oil Socks 3" x 96"	10	
P3		Pad Oil Bundle	8	
P4		Mallet Dead Blow Pad Oil Bundle	1 8	
		Extension Cable 12/3	2	
		Bag Disposal Roll Yellow	1	
P5		Delineator Bases	15	
		Oil Absorbent Granules Outdoor All Purpose	6	
		Drain Protector Urethane	1	
P6		Boom Oil 510	16	

P7		Berm 10’ x 10’ x 20” Membrane Repair Kit/Tools Berm 10’ x 10’ Tarp 20’ x 30’ Tarp 10’ x12’ Drain Insert Berm Mini 36” x36” x 4” Berm Mini 48” x 48” x 6” Drain Cover Rubber Neoprene	1 1 2 2 2 3 3 4	
		PVC 90 PVC 45	6 6	
P8		Pad Oil Bundle	8	
		Roll Yellow Disposal Bags	1	
		Extension Cable 12/3	1	
P9	**Tote 20**	Fuel Conditioner Engine Oil 5W30 Funnel Storage Seal Fogging Oil Engine Manuals	2 2 2 2	
		Gasoline Can 5g	2	
		Trash Pump	1	
		Generator	1	
P10	**Tote 21**	Pillow HazMat 18” x 18”	10	
		Pad HazMat Bundle	1	
	Tote 22	Pillow HazMat 18” x 18”	1	
	Tote 23	Socks HazMat 3” x 48”	20	
P11	**Tote 24**	Socks Universal 3” x 96”	10	
		Pad HazMat Bundle	1	

	Tote 25	Pillow HazMat 18" x 18"	10	
	Tote 26	Pillow Oil 18" x 18"	10	
P12		Pad HazMat Bundle	4	
DF		Spare Wheel Trailer Manual White Board Drum Open Top Delineator Cable Electrical 30' 16/3	1 1 1 1 15 1	
DR		Sawhorse Pressure Washer Fire Extinguisher/Bracket 20lb SB-Drum Pack SB-X-Pack Traffic Cones Light LED Dual TriPod E-Track 4'	2 1 1 10 5 10 2 2	
	Drum 1	Drum Steel Open Top Axe Fireman's Axe Pick/Mattock Crow Bar Squeegee/Handle Broom Handle Threaded Aluminum Scoop Aluminum Shovel Broom Fine Broom Course Broom Corn Grass Rake Spading Fork Sledge Hammer 10lb Prybar 36" Pipe Wrench Bolt Cutter 24" Shovel Square Shovel Round	1 1 1 1 1 2 12 1 1 1 1 2 1 1 1 1 1 1 2 1	

		Grate Lifter	1	
		Tined Rake	1	
		Funnel	1	
		Spray Wand	3	
		Polyethylene Sheet Roll	2	
		Handsaw	1	
		Post Pounder	1	
PF	**Tool Box**	Knife Olfa 25mm	1	
		Blade Replacement 25mm	1	
		Screwdriver Set	1	
		Engineering Tool Set	1	
		Bow Saw 12″	1	
		Chisel 1″	1	
		Chisel 3″	1	
		Crescent 12″	1	
		Crescent 10″	1	
		Crescent 6″	1	
		Drum Wrench	1	
		Tape Measure 25′	1	
		Hacksaw	1	
		Hacksaw Blades	1	
		Hammer Framing 24oz	1	
		Pliers Fence	1	
		Pliers Slip Joint	1	
		Pliers Needle Nose	1	
		Pliers Diagonal Cut	1	
		Pliers Tongue & Groove 16″	1	
		Pliers Tongue & Groove 10″	1	
		Pliers End Cut	1	
		Pliers Tin Snip 12″	1	
		Prybar 18″	1	
		Pruner 1″	1	
		Shear 7″	1	
		Vice Grip 10WR	1	
		Vice Grip 11SP	1	
		Mallet 18″	1	
		Duct Tape Red	4	
		Flagging Tape Blue	2	
		Flagging Tape Green	2	
		Flagging Tape Red	2	
		Flagging Tape Pink	2	
		Glue PVC	1	
		Zap Straps 14″ 100ea	5	
		Orange Marking Paint	2	

PF		Cable Electrical 30' 16/3 First Aid Kit BCL1 Air Horn Whistle Hitch Lock Eye Wash Station Dual Spare Hooks S	1 1 1 2 1 1 1	
		PPE Bags – Grab-n-Go	6	
		Hard Hats Hi-Viz Jackets	6 6	
PR		Rapid Deployment System: Roll Absorbent 144'x 38"	4	
		Ladder	3	
	General On Floor or Hanging	PVC 4" Pipe Joiners PVC Pipe 4" x 2' PVC Pipe 4" x 10' Hose Rigid Suction Pickup 2"	6 7 6 3	
	Container Yellow Wheeled Waste:	10' x 10' Berm Frames, set Roll Absorbent 144'x 38"	1 1	
	Container Yellow Wheeled Waste:	20' x 30' Berm Membrane	1	
	Tote __	PVC 90º PVC 45º	6 6	

Created 26 July 2022
Last Modified 10 October 2022

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Content of Grab-n-Go Bag - Bag 6

Item	Qty	Date Check
APR Cartridge Chem Combo	1 pr	
APR North 7700	1	
Bug Spray Deet 25%	1	
Ear Muffs 25dB	1	
Ear Plugs Foam	6 pr	
Glove Nitrile Ansell HD	1 pr	
N95 Mask	5	
Glove Nitrile Dispose 8 mil	5 pr	
Glove Neoprene Latex 87-276	1 pr	
Headlamp 2500 lm	1	
Headlamp Charging Cable	1	
Laminated blank paper	2 pc	
Protective Eye Glasses	1	
Protective Eye Goggles	1	
Sharpie Pen Black	2	
Sharpie Pen Red	2	
Sunscreen SPF 60	1	
Water Bottle Stainless	1	
Whistle Safety Pink	1	
Knife Olfa	1	
Contact us to update/revise this list...		Created 7 Sep 2022

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Glowworm
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