LAFARGE CANADA INC.

MSDS

Material Safety Data Sheet

PRODUCT NAME: PORTLAND CEMENT

1. CHEMICAL PRODUCT & COMPANY

Supplier
Name: Lafarge Canada Inc.
Address: 1200, 10655 Southport Road SW
Calgary, AB T2W 4Y1
Telephone: 403-271-9110

Product Identifier
Hydraulic Cement, Oil Well Cement, White Cement, Portland Cement Type I, IA, II, IIA, II L.A., III, IIIA, IV, IVA, V, VA, 10, 20, 30, 40, 50, OHWh, OWG Cement

Note: This MSDS covers many products. Individual composition of hazardous constituents will vary.
WHMIS Classification: D2A, E

Emergency Telephone Numbers
Health: CHEMTREC 1-800-424-9300
Transportation: CHEMTREC 1-800-424-9300

2. INFORMATION ON COMPONENTS

Component Name	%	CAS No.
Tri-Calcium Silicate	20 - 70	12168-85-3
Di-Calcium Silicate	10 - 60	10034-77-2
Tetra-Calcium-Alumino-Ferrite	5 - 15	12068-35-8
Calcium Sulfate	2 - 10	Various
Tri-Calcium Aluminate	1 - 15	12042-78-3
Calcium Carbonate	0 - 5	1317-65-3
Magnesium Oxide	0 - 4	1309-48-4
Calcium Oxide	0 - 0.2	1305-78-8
Crystalline Silica	0 - 0.2	14808-60-7
Chromates	0 - 0.005	Various

Component Name	EXPOSURE LIMITS OSHA PEL TWA	ACGIH TLV TWA
Portland Cement (CAS 65997-15-1)		
(Respirable Dust)	5 mg/m^3	
(Total Dust)	15 mg/m^3	10 mg/m^3
Calcium Sulfate		
(Respirable Dust)	5 mg/m^3	
(Total Dust)	15 mg/m^3	10 mg/m^3
Calcium Carbonate		
(Respirable Dust)	5 mg/m^3	
(Total Dust)	15 mg/m^3	10 mg/m^3
Magnesium Oxide	10 mg/m^3	10 mg/m^3
Calcium Oxide	5 mg/m^3	2 mg/m^3
Crystalline Silica (Respirable Dust	0.1 mg/m^3	.01 mg/m^3
Chromates	0.1 mg(CrO_3)/m^3	0.05 mg(Cr)m^3
Nuisance Dust		
(Respirable Dust)	5 mg/m^3	5 mg/m^3
(Total Dust)	15 mg/m^3	10 mg/m^3

3. HAZARD IDENTIFICATION

Emergency Overview

Emergency Overview
Solid; grey powder; odorless.

Potential Health Effects
INHALATION (acute): Breathing dust may cause nose, throat or lung irritation and choking. The described effect depends on the degree of exposure.

INHALATION (chronic): Prolonged or repeated exposure may cause lung injury including silicosis. This product may contain crystalline silica. Crystalline silica has been classified by IARC as a known human carcinogen. Some human studies indicate potential for lung cancer from crystalline silica exposure. Long term exposures which result in silicosis may result in additional health effects. Risk of injury depends on duration and level of exposure.

EYE CONTACT (acute/chronic): May cause eye irritation, burns and damage to cornea.

SKIN CONTACT (acute/chronic): May cause dry skin, redness, discomfort, irritation or burns. May produce allergic reaction potentially associated with hexavalent chromium. Thickening of the skin (scleroderma) may be associated with exposure to high levels of crystalline silica.

INGESTION (acute/chronic): Ingestion of large amounts may cause intestinal distress.

4. FIRST AID MEASURES

INHALATION: Move person to fresh air. Seek medical attention for discomfort.

EYE CONTACT: Rinse thoroughly with water. Seek medical attention for abrasions.

SKIN CONTACT: Wash with soap and water. Use moisturizing creams for irritated skin. Seek medical attention for burns.

INGESTION: Do not induce vomiting, but drink plenty of water. Seek medical attention for discomfort.

5. FIREFIGHTING MEASURES

Flashpoint and Method: None.

Flammable Limits: Not combustible.

Autoignition Temperature: None.

General Hazard: Avoid breathing dust.

Firefighting Instructions: Treat adjacent material.

Firefighting Equipment: This product is not a fire hazard. Self contained breathing apparatus is recommended to limit exposures to smoke from any combustion source.

Hazardous Combustion Products: None.

6. ACCIDENTAL RELEASE MEASURES

General: Wind blown dust may cause the hazards identified in Section 3. Remove spilled material to limit potential harm.

Land Spill: Clean up spilled material.

Water Spill: Clean up spilled material.

7. HANDLING AND STORAGE

General: Avoid accidental release. Store dry and away from water.

Storage Temperature: Unlimited.

Storage Pressure: Unlimited.

Empty Containers: Dispose of containers in an approved landfill or incinerator.

8. EXPOSURE CONTROL & PERSONAL PROTECTION

Engineering Controls
Use exhaust ventilation to maintain dust levels below exposure limits in workplaces with poor ventilation and dusty conditions.

Personal Protection
RESPIRATORY PROTECTION: Under ordinary conditions no respiratory protection is required. Wear a NIOSH approved respirator when exposed to dust above exposure limits.

EYE PROTECTION: Wear glasses or safety goggles to prevent contact with eyes. Wearing contact lenses when using this product under dusty conditions is not recommended.

SKIN PROTECTION: Use gloves, shoes and protective clothing to prevent skin contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

Vapor Pressure:	Not measurable
Vapor Density:	Not measurable
Specific Gravity:	3.2
Solubility in Water:	Slight (0.1 - 1.0%)
Evaporation Rate:	Not measurable
pH (in water):	12 - 13
Boiling Point:	> 1000° C
Freezing Point:	None, solid
Viscosity:	None, solid

10. STABILITY AND REACTIVITY

General: Product is stable but must be kept dry. Reacts with water forming polymerized silicates and calcium oxide.

Incompatible Materials and Conditions to Avoid: Must be kept dry. Dissolves in hydrofluoric acid producing corrosive silicon tetrafluoride gas. Silicates react with powerful oxidizers such as fluorine, chlorine trifluoride and oxygen difluoride.

Hazardous Decomposition: None, powdered solid.

11. MSDS PREPARATION AND TOXICOLOGICAL INFORMATION

For detailed toxicological information contact:

Environment and Government Affairs
Lafarge Corporation
P. O. Box 4600
Reston, VA 20195-1415
703-264-3600

12. ECOLOGICAL INFORMATION

For detailed ecological information:
See Section 11 above.

13. DISPOSAL CONSIDERATIONS

Dispose in landfill in accordance with all applicable regulations. Any disposal practice must be in compliance with local, provincial, state and federal laws and regulations. Contact local environmental agency for specific rules.

14. REQUIRED TRANSPORT INFORMATION

Not a hazardous material for DOT or TDG shipping.

15. REGULATORY INFORMATION

OSHA Hazard Communication Rule, 29 CFR 1910.1200:

This product is considered by OSHA to be a hazardous chemical and should be included in the employer's hazard communication program.

CERCLA/SUPERFUND, 40 CFR 117,302:

Not listed.

SARA TITLE III, Sections 311-312 Hazard Category:

This product has been reviewed according to the EPA Hazard Categories promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 and is considered a hazardous chemical and a delayed health hazard.

SARA Section 313 Information:

This product contains NONE of the substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

Toxic Substance Control Act (TSCA):

Some constituents identified in this product are listed on the TSCA Inventory.

California Proposition 65:

CRYSTALLINE SILICA (CAS - 14808-60-7) is considered to be a carcinogen by the state of California.

WHMIS Information

This product contains substances considered to be hazardous by Health Canada and is a controlled product. Consult local authorities for acceptable exposure limits. WHMIS Information - 416-327-7066.

16. OTHER INFORMATION

Abbreviations:

CAS No	Chemical Abstract Service number
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
ACGIH	American Conference of Governmental Industrial Hygienists
TLV	Threshold Limit Value
TWA	Time Weighted Average (8 hour)
CL	Ceiling Limit
mg/m^3	milligrams per cubic meter
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
pH	negative log of hydrogen ion
>	greater than
DOT	U.S. Department of Transportation
TDG	Transportation of Dangerous Goods
CFR	Code of Federal Regulations
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
SARA	Superfund Amendments and Reauthorization Act
WHMIS	Workplace Hazardous Materials Information System

Revision Summary: Revised August 1997

Information in this MSDS is believed to be current and accurate at the time provided. It is the user's obligation to determine the conditions of safe use of this product.

Material Safety Data / Fiche signalétique

WESTCOAST DRILLING SUPPLIES LTD.
8069 River Way, Delta, British Columbia,
Canada V4G 1L3
Ph. (604) 940-6050 Fax (604) 940-6080

EMERGENCY 1-800-665-6645

SECTION I: IDENTIFICATION OF PRODUCT

PRODUCT NAME:	**CALCIUM CHLORIDE FLAKE**
CHEMICAL FAMILY:	Calcium Chloride (77%)
WHMIS CLASSIFICATION:	Class D-2(B)
WORK PLACE HAZARD:	Skin and Eye Irritant

TRANSPORTATION OF DANGEROUS GOODS (TDGR)

CLASSIFICATION:	Not Dangerous Goods
PACKAGE GROUP:	Not applicable
PRODUCT IDENTIFICATION NUMBER (PIN):	Not applicable

SECTION II: HAZARDOUS INGREDIENTS

INGREDIENT	PERCENTAGE	CAS NUMBER	LD50	LC50
Calcium Chloride	>90%	10043-52-4	1090 mg/kg	Not determined
Strontium Chloride	1%	10476-85-1		Not determined

SECTION III: TOXICOLOGICAL PROPERTIES

ROUTE OF ENTRY:
[XXX] Skin, [XXX] Eye Contact, [ ] Inhalation, [ ] Ingestion

SKIN CONTACT:	Prolonged or repeated contact with the dust may irritate the skin or cause burns especially if skin is moist or if material is confined to the skin.
EYE CONTACT:	Dusts may cause moderate to severe eye irritation with corneal injury that may be slow to heal.
INHALATION:	Breathing dust may irritate the nose and throat and cause coughing and chest discomfort.
INGESTION:	Swallowing solids may cause gastrointestinal irritation or ulceration.

SECTION IV: FIRST AID MEASURES

SKIN CONTACT: Immediately wash skin with plenty of soap and water. Remove contaminated clothing and footwear; wash before reuse. Get medical attention if irritation persists after washing.
EYE CONTACT: Flush material out immediately then get medical attention. Immediately flush eyes with large amounts of water for fifteen (15) minutes, holding lids apart to ensure flushing of the entire surface.
INHALATION: Remove to fresh air. Give artificial respiration if not breathing. Get immediate medical attention.
INGESTION: In conscious, immediately induce vomiting. Get immediate medical attention. Do not give anything by mouth to an unconscious or convulsing person.

SECTION V: PHYSICAL DATA

APPEARANCE AND ODOR:	White to off white pellets; odorless
DENSITY (SPECIFIC GRAVITY):	2.2
BOILING POINT:	204° C
MELTING POINT:	Not applicable
WATER SOLUBILITY:	Very
% VOLATILE BY VOLUME:	Not applicable
EVAPORATION RATE:	Not applicable

WESTCOAST DRILLING SUPPLIES LTD
8069 River Way, Delta, British Columbia, Canada V4G 1L3
Phone: (604) 940-6050 · Fax: (604) 940-6080
Toll Free: 1-800-665-6645

CALCIUM CHLORIDE FLAKE

VAPOR PRESSURE (mm Hg):	Not applicable
VAPOR DENSITY (Air = 1):	Not applicable
pH:	Not determined

SECTION VI: FIRE AND EXPLOSION HAZARD DATA

FLASH POINT:	Not applicable
FLAMMABLE LIMIT:	Not applicable
EXTINGUISHING MEDIA:	Not a combustible material.
SPECIAL FIRE FIGHTING PROCEDURES:	Self-contained respirators required for fire fighting personnel.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	None

SECTION VII: REACTIVITY DATA

STABLE [XXX] INSTABLE [ ]

INCOMPATIBILITY (CONDITIONS TO AVOID):	Decomposes above 204° C
HAZARDOUS DECOMPOSITION PRODUCTS:	None
HAZARDOUS POLYMERIZATION:	Will not occur [XXX] May occur [ ]

SECTION VIII: PREVENTATIVE MEASURES

RESPIRATORY PROTECTION:	Approved dust respirator or mask.
VENTILATION:	Local mechanical exhaust.
PROTECTIVE GLOVES:	Rubber gloves.
EYE PROTECTION:	Chemical goggles.
OTHER PROTECTIVE EQUIPMENT:	An eyewash and safety shower should be nearby and ready for use.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Store in a cool, very dry place. Keep container tightly closed when not in use. Wash thoroughly after handling. Do not get in eyes, on skin or on clothing.

STEPS TO BE TAKEN IN CASE OF SPILL OR LEAK:

Wear protective equipment. For small spills, sweep up and dispose of in approved waste containers. For large spills, shove into approved waste containers.

WASTE DISPOSAL METHOD:

Dispose of contaminated product and material used in cleaning up spills or leaks in manner approved for this material. Consult appropriate regulatory agencies to ascertain proper disposal procedures.

SECTION IX: PREPARATION

The information contained herein is given in good faith, but no warranty, expressed or implied is made.

DATE ISSUED: November 24, 1988 DATE REVISED: September 1, 1997

BY: Product Safety Committee

PRODUCT SAFETY DATA

SECTION I - MATERIAL IDENTIFICATION

MATERIAL NAME/IDENTIFIER

OMC Hi-Vis Gear Oil

MANUFACTURER'S/ SUPPLIER'S NAME & ADDRESS

Castrol Canada Inc.
3660 Lakeshore Blvd. West, Toronto, Ontario M8W 1P2

CHEMICAL NAME	CHEMICAL FAMILY	CHEMICAL FORMULA
Mixture of Basestock and Additives	Petroleum Hydrocarbon	-
MOLECULAR WEIGHT	**TRADE NAME & SYNONYMS**	**MATERIAL USE**
-	Gear Oil	Gear lubricant

SECTION II - HAZARDOUS INGREDIENTS OF MATERIAL

HAZARDOUS INGREDIENTS	% CONCENTRATION (Approximate)	CAS/NA/ UN #	LD 50 (Specify Species & Route)	LC 50

THIS IS A NON-CONTROLLED PRODUCT UNDER W. H. M. I. S.

SECTION III - PHYSICAL DATA FOR MATERIAL

PHYSICAL STATE	APPEARANCE & ODOUR		ODOUR THRESHOLD (ppm)	
Liquid	Amber oil with characteristic pungent odour		Not Available	
VAPOUR PRESSURE (mm)	**VAPOUR DENSITY (Air=1)**	**EVAPORATION RATE**	**FREEZING PT**	**BOILING PT**
Not Available	Not Available	Not Available	Minus 30 °C	-
SOLUBILITY IN WATER (20 °C)	**% VOLATILE (by volume)**	**pH**	**DENSITY (g/ml)**	**COEFFICIENT WATER/OIL DISTRIBUTION**
Insoluble	Nil	-	0.890	Not Available

MATERIAL NAME/IDENTIFIER

OMC Hi-Vis Gear Oil

SECTION IV - FIRE AND EXPLOSION HAZARD OF MATERIAL

FLAMMABILITY Yes[ ] No[x] IF YES, UNDER WHICH CONDITIONS:

MEANS OF EXTINCTION
Carbon Dioxide, Dry Chemical, Foam, Sand.

SPECIAL PROCEDURES
Wear self-contained breathing apparatus.

FLASH POINT & METHOD	UPPER EXPLOSION LIMIT	LOWER EXPLOSION LIMIT
221 °C (COC)	(% by volume) Not Available	(% by volume) Not Available

AUTO IGNITION TEMPERATURE	HAZARDOUS COMBUSTION PRODUCTS
Not Determined	Oxides of Carbon, Nitrogen, Sulphur and Phosphorus

SECTION V - REACTIVITY DATA

CHEMICAL STABILITY Yes[x] No[ ] IF NO, UNDER WHICH CONDITION:
Stable

INCOMPATIBILITY TO OTHER SUBSTANCES Yes [x] No [ ]
IF SO, WHICH ONES:
Strong Oxidizers

REACTIVITY AND UNDER WHAT CONDITIONS
Stable. Hazardous polymerization will not occur.

HAZARDOUS DECOMPOSITION PRODUCTS
Fumes, Smoke, Oxides of Carbon, Nitrogen, Phosphorus and Sulfur are produced on combustion.

SECTION VI - TOXICOLOGICAL PROPERTIES OF MATERIAL

PRIMARY ROUTE(S) OF ENTRY

Skin Contact [x]	Skin Absorption [ ]	Eye Contact [x]
Inhalation Acute [ ]	Inhalation Chronic [ ]	Ingestion [ ]

EFFECTS OF ACUTE EXPOSURE TO MATERIAL
Repeated and prolonged contact may cause skin and eye irritation.

MATERIAL NAME/IDENTIFIER

OMC Hi-Vis Gear Oil

EFFECTS OF CHRONIC EXPOSURE TO MATERIAL
May cause dermatitis and defatting.

LD 50 OF MATERIAL (Specify Species and Routes)	LC 50 OF MATERIAL (Specify Species and Routes)	EXPOSURE LIMIT(s)	IRRITANCY OF MATERIAL
Not Available	Not Available	ACGIH 5mg/m3 oil mist	Not Available

OTHER

SECTION VII - PREVENTIVE MEASURES

PERSONAL PROTECTIVE EQUIPMENT

GLOVES (Specify)	RESPIRATORY (Specify)	EYE (Specify)
Impervious PVC recommended	None required under normal use	Safety Goggles recommended
CLOTHING (Specify)	**FOOTWEAR**	**OTHERS (Specify)**
Coverall/Apron recommended	No special Requirement	Eye bath & Safety shower recommended

ENGINEERING CONTROLS (Ventilation, Enclosed process, specify)
General ventilation and local exhaust recommended.
Build up of oil mists in the working atmosphere must be prevented

LEAK AND SPILL PROCEDURE
Prevent entry into water sources. Soak up with a suitable absorbent such as sand or diatomaceous earth.

WASTE DISPOSAL
Dispose of in an approved Incinerator or use Licensed Waste disposal facility.

HANDLING PROCEDURES AND EQUIPMENT
Avoid repeated and prolonged skin contact. Prevent eye contact. Maintain high standard of personal hygiene.

STORAGE REQUIREMENTS
Keep away from extreme heat and open flame.

SPECIAL SHIPPING INFORMATION
None

MATERIAL NAME/IDENTIFIER

OMC Hi-Vis Gear Oil

SECTION VIII - FIRST AID MEASURES

EYES: Flush eyes immediately with copious amount of water for at least 15 minutes. Consult a physician if irritation persists.

SKIN: Remove contaminated clothing immediately and wash before re-use. Wash affected areas immediately with soap and water. Consult a physician if irritation develops.

INGESTION: Seek immediate medical attention.
DO NOT INDUCE vomiting because of the risk of aspiration.

INHALATION: Move to fresh air. If breathing is difficult, give oxygen. Consult a physician.

ADDITIONAL INFORMATION
None

SECTION IX - PREPARATION DATE OF MSDS

PREPARED BY (Group, Department)	PHONE NUMBER	DATE
Castrol Laboratory	(416) 252-5511	September, 1988

The information presented herein has been compiled from sources considered to be dependable and is accurate to the best of Castrol's knowledge. Such information relates only to the specific material referred to herein and does not relate to use in combination with any other material or in any process. Castrol assumes no responsibility for injury to or death of the recipient or any other person or for any damage to any property or for any consequential damage resulting directly or indirectly from the use of this product, and recipient assumes all such risks.

FNT '88

Material Safety Data Sheet

WHMIS (Pictograms)	WHMIS (Classification)	Protective Clothing
	D-2A, D-2B	

Product Name	**ANTIFREEZE**	Code	File # W269
		DSL	On the DSL.
		Print Date: 03/12/97.	
Supplier	Petro-Canada P.O. Box 2844 Calgary, Alberta T2P 3E3		
Synonym	Universal antifreeze, radiator antifreeze, diesel antifreeze.	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).
Chemical Name	Not applicable.		
Chemical Family	Glycols.		
Chemical Formula	Not applicable.		
Manufacturer	PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3	Material Uses	Used as an engine antifreeze coolant.

		Exposure Limits (ACGIH)			
me	CAS #	TLV-TWA(8 h)	STEL	CEILING	% (V/V)
Ethylene glycol*	107-21-1	Not establised	Not established	100 mg/m³ aerosol	90-100
Diethylene glycol	111-46-6	Not applicable	Not applicable	Not applicable	1-5
Corrosion inhibitor (borax), phosphate, water	Not applicable	Not applicable	Not applicable	Not applicable	1-5
* ACGIH (1996): A4					

Potential Acute Health Effects	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, mists or fumes, inhalation of this product may cause irritation of the breathing passages. May be irritating to skin. Irritating to eyes and mucous membranes. If a large quantity is ingested (100 ml) in a single dose, the victim may appears drunk without the breath odour of alcohol. Other symptoms are hypertension, abnormally fast heart beat, convulsion and coma. For more information, refer to Section 11.
Potential Chronic Health Effects	Chronic poisoning - nystagmus (involuntary, rapid movement of the eyeball), impaired function to kidneys and liver.

Eye Contact	Check for and remove any contact lenses. IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. DO NOT use an eye ointment. Seek medical attention if irritation persists.
Skin Contact	Remove contaminated clothing - launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Get medical attention if redness or irritation occurs.
Inhalation	Evacuate the victim to a safe area as soon as possible. If the victim is not breathing, perform mouth-to-mouth resuscitation. Administer oxygen if available. Allow the victim to rest in a well ventilated area. Seek medical attention.
Hazardous Inhalation	No additional information.
ngestion	DO NOT induce vomiting because of danger of aspirating liquid into lungs. Get immediate medical attention.

ANTIFREEZE *Page Number: 2*

Hazardous Ingestion	NOTES TO PHYSICIAN: Alcohol dehydrogenases active in oxidation of ethylene glycol to produce dangerous toxins. Ethyl alcohol may be given early (equiv. 95% - 11 mL/h for 4 days) as competative substrate for alcohol dehydrogenase to retard oxidation of glycol. Renal dialysis to remove unmetabolized glycol. Severe metabolic acidosis-vigorous treatment with sodium bicarbonate. Biochemical and renal function should be monitored throughout treatment course. Inevriation like ethyl alcohol may be delayed, then more profound coma, seizures, severe metabolic adiosis, acute uremia, hepatic degeneration may occur. Initial symptoms may be followed by several good days, followed by renal failure.

The Product is:	Combustible liquid (NFPA).
Auto-Ignition Temperature	400°C (752°F)
Flash Points	Closed Cup: 116°C (241°F) (Tag.)
Flammable Limits	Lower: 3.2%, Upper: 15.3%
Products of Combustion	Carbon oxides (CO, CO2), smoke and irritating fumes as products of incomplete combustion.
Fire Hazards in Presence of Various Substances	Low fire hazard. Must be moderately heated before ignition will occur. Avoid contact with strong oxidizing agents, including peroxides, chlorine and strong acids.
Explosion Hazards in Presence of Various Substances	Do not cut, weld, heat, drill or pressurize empty container. Vapours are heavier than air and may travel considerable distance to sources of ignition and flash back.
Fire Fighting Media and Instructions	NAERG96, GUIDE 152, substances-toxic (combustible). 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. SMALL FIRE: dry chemical, CO2 or water spray. LARGE FIRE: water spray, fog or foam. 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. 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.
Special Remarks on Fire Hazards	No additional remark.
Special Remarks on Explosion Hazards	No additional remark.

Small Spill	Avoid contact. ELIMINATE ALL IGINITION SOURCES; no flares, smoking or flames in hazard area. Stop leak if without risk. Contain spill. Absorb with inert absorbent such as dry clay, diatomaceous earth, or commericial sorbents. Place used absorbent in closed metal containers for later disposal. DO NOT FLUSH TO SEWERS, STREAMS, OR OTHER BODIES OF WATER. Check with applicable jurisdictions for specific disposal requirements and cleanup of contaminated materials and empty containers.
Large Spill	Land spill: Dike with dry clay or diatomaceous earth to contain spill. DO NOT use combustible materials such as sawdust. Recover spill with electrically grounded explosion-proof pumps, hand pumps or vacuum into drums for re-use or disposal. Water spill: If floating, skim and remove. Check with applicable jurisdictions for specific disposal requirements and cleanup of contaminated materials.

Handling	Keep away from heat, spark, open flames 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. 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 tightly closed containers in cool, dry, isolated, well-ventilated area, and away from strong oxidizing agents.

Engineering Controls	For normal outdoor application, special ventilation is not necessary. For indoor or confined spaces, provide explosion-proof local exhaust ventilation, or other engineering controls, to keep airborne concentration below the allowable threshold limit value. Make-up air should always by supplied to balance air removed by exhaust ventilation. Ensure that eyewash station and safety shower are close to work-station.
Personal Protection	Chemical splash goggles in case of splashing. Wear long sleeved clothing to minimize skin contact. Full-faced self-contained breathing apparatus or air supplied (when TLV-ceiling concentrations exceed 50 ppm). For casual contact, PVC gloves are suitable. For direct contact for more than 2 hours, VITON, NEOPRENE, or NEOPRENE+NATURAL RUBBER gloves are recommended.
Personal Protection in Case of a Large Spill	No additional remarks
Exposure Limits	TLV-ceiling of 100 mg/m³ aerosol concentration recommended by manufacturer is based on ACGIH TLV for ethylene glycol. Consult local authorities for acceptable exposure limits.

Physical State and Appearance	Clear liquid.
Dropping Point	Not applicable.
Penetration (@ 25°C)	Not available.
Boiling Point	157°C (315°F)
Melting Point	Not applicable.
Specific Gravity	1.12 (Water = 1).
Vapor Pressure	0.01 kPa @ 20°C (0.075 mmHg @ 68°F)
Vapor Density	2.1 mg/l (Air = 1).
Volatility	<0.01 (Butyl acetate = 1).
Odor Threshold	Not available.
Oil / Water Dist. Coeff.	Not available.
Viscosity (@ 40 °C)	Not available.
Solubility	Easily soluble in water, acetone, acetic acid, alcohols and glycols.

Odor	Mild sweetish glycol odour.
Taste	Not applicable.
Color	Straw-green color.

Stability	The product is stable.		
Instability Temperature	Not available.		
Conditions to Avoid	Avoid excessive heat and moisture.		
Incompatibility with Various Substances	Highly reactive with oxidizing agents.	Decompostion products:	COx, smoke on combustion.
Corrosivity	Slightly corrosive to iron containers.		
Special Remarks on Reactivity	Absorbs moisture from the air.		
Special Remarks on Corrosivity	No additional remark.		

...ke all additional action necessary to prevent and remedy the adverse effects of the spill

7. FIRE AND EXPLOSION HAZARD

Flash point and method 108 deg C coc

GENERAL HAZARDS:

Low Hazard, liquids may burn upon heating to temperatures at or above the flash point.
Toxic gases will form upon combustion.
Empty product containers may contain product residue. Do not pressurize, cut, heat, weld, or expose containers to flame or other sources of ignition.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel.
Shut off fuel to fire.
Use foam, dry chemical or water spray to extinguish fire.
Respiratory and eye protection required for fire fighting personnel.
Avoid spraying water directly into storage containers due to danger of boilover.
A self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA may not be required.

HAZARDOUS COMBUSTION PRODUCTS:

Smoke, carbon monoxide, carbon dioxide

8. REACTIVITY DATA

STABILITY:

This product is stable Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents

9. NOTES

10. PREPARATION

Prepared by SPECIALTIES TECHNICAL SERVICES
ESSO PETROLEUM CANADA
55 St Clair Avenue West
Toronto, Ontario
M5W 2J8
(416) 968-5114

CAUTION

CAUTION: " The information contained herein relates only to this product or material and may not be valid when used in combination with any other product or material or in any process. If the product is not to be used for a purpose or under conditions which are normal or reasonably foreseeable, this information cannot be relied upon as complete or applicable. For greater certainty, uses other than those described in Section 1 must be reviewed with the supplier. The information contained herein is based on the information available at the indicated date of preparation. This MSDS is for the use of Esso Petroleum Canada customers and their employees and agents only. Any further distribution of this MSDS by Esso Petroleum Canada customers is prohibited without the written consent of Esso Petroleum Canada "

Battery Acid

Product	Wet electric storage battery — Chemical Formula: N/A
Other Names	Lead acid storage battery
Manufacturer – Name	VARTA Batteries Ltd.
Address	Head Office: 2 Lansing Square, North York, Ont. M2J 4P8-phone 494-
Emergency Phone No.	Bus. 416-494-1457 Home. 416-493-5577- W. H. Henry Bu . 416-494-1457 Home. 416-222-2064 P. A. Atkinson

II. COMPONENTS

Chemical Ingredients	TLV
Dilute sulphuric acid - 30% - electrolyte	N/A
Lead - fully encased & under electrolyte	N/A
Containers and cover - polypropylene - non toxic plastic, or hard rubber	N/A
Paper or plastic separators	N/A

(Include any chemicals listed in the ACGIH TLV Booklet or Ontario Government Regulation)

III. HEALTH HAZARD INFORMATION

Route	Effects (Include both immediate and long-term effects)
INHALATION ☐	Fumes irritate nose and throat but fumes generated only if batteries are on charge (not a transportation condition).
EYE CONTACT ☒	If acid splashes from broken battery it would severely irritate ey and must be washed away from eyes immediately (see first aid).
SKIN CONTACT ☒	If acid leaks from battery and contacts skin it would cause mild burns and/or rash. Rubber gloves should be worn if handling leaki battery and acid must be washed from skin.
SKIN ABSORPTION ☐	Acid of this strength not absorbed through skin.
INGESTION ☒	If battery fluid ingested would burn throat and stomach.

IV. HANDLING PRECAUTIONS

Personnel cleaning up spill should wear rubber gloves, eye goggles and rubber foot wear.

(Include recommendations for personal protective equipment and controls)

V. FIRE AND EXPLOSION DATA

Flashpoint	Flammable Limits	LEL
N/A	N/A	UEL N/

REACTIVITY

STABLE [X]	UNSTABLE [ ]	HAZARDOUS DECOMPOSITION PRODUCTS	INCOMPATIB...
	(List conditions to avoid) Avoid shorting batteries such as contacting across terminals with any metal object	(List) N/A	(List materials to avoid) N/A

EMERGENCY AND FIRE FIGHTING PROCEDURE

Deluge with foam, dry chemical.
If none of the above available, deluge with water.

VI. SPILLAGE CLEAN-UP AND WASTE DISPOSAL PROCEDURE

Clean up personnel should wear safety goggles, rubber gloves, rubber boots and rubber apron. Broken product should be packed in plastic bags and taken to battery repair depot or scrap dealer for eventual transfer to a smelter. Use ... to neutralize or earth to absorb liquid.

VII. FIRST AID

INHALATION	Not applicable to batteries in transit but if on charge in confined poorly ventilated area and fumes irritating, remove person to fresh air.
EYES	Hold eyelids open and flush with clean water for 15 minutes. Get medical help promptly
SKIN	Remove contaminated clothing and flush skin with water for 15 minutes. Don't attempt to neutralize with alkalines.
INGESTION	Get medical help. Give patient copious amounts of water. Don't induce vomiting.

VIII. STORAGE INSTRUCTIONS

N/A

IX. ADDITIONAL INFORMATION