



Material Safety Data Sheet

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

Section 1. Chemical Product and Company Identification

Product Name	PETRO-CANADA ANTIFREEZE	Code	W268
Synonym	Universal Antifreeze, Radiator Antifreeze, Diesel Antifreeze, Petro-Canada Antifreeze-Coolant, Petro-Canada Heavy Duty Antifreeze-Coolant, Pre-Mix Antifreeze, Petro-Canada Premium Radiator Antifreeze, Diesel Engine Coolant, Pre-Mixed Radiator Antifreeze/Coolant Petro-Canada.	Validated on	5/11/2006
Manufacturer	PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3	In case of Emergency	Petro-Canada: 403-296-3000 Canutec Transportation: 613-896-6668 Poison Control Centre: Consult local telephone directory for emergency number(s).
Material Uses	Used as an engine antifreeze coolant.		

Section 2. Composition and Information on Ingredients

Name	CAS #	% (W/W)	Exposure Limits (ACGIH)		
			TLV-TWA(8 h)	STEL	CEILING
Ethylene glycol	107-21-1	≥45	Not established	Not established	100 mg/m ³ (aerosol)
Sodium tetraborate pentahydrate (Diesel Engine Coolant only)	12179-04-3	≤5	1 mg/m ³	Not established	Not established
Manufacturer	Not applicable				
Recommendation					
Other Exposure Limits	Consult local, state, provincial or territory authorities for acceptable exposure limits.				

Section 3. Hazards Identification

Potential Health Effects	Contact with this product may cause eye irritation. Not expected to cause more than slight skin irritation. Inhalation of this product may cause respiratory tract irritation. Ingestion may be extremely hazardous. May cause teratogenicity/embryotoxicity. May cause damage to reproductive organs. For more information refer to Section 11 of this MSDS.
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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	May be combustible at high temperature.	Flammable Limits	Lower: 3.2%, Upper: 15.3%
Flash Points	Closed Cup: 116°C (241°F) (Tagliabue) Open Cup: 116°C (241°F) (Cleveland)	Auto-ignition Temperature	413°C (776°F)
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.

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Products of Combustion	Carbon oxides (CO, CO ₂), smoke and irritating vapours as products of incomplete combustion.
Fire Fighting Media and Instructions	NAERG2004, 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 CO ₂ . 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 6. Accidental Release Measures

Material Release or Spill	IN THE EVENT OF A LARGE SPILL CONSIDER THE FOLLOWING CONTROL MEASURES: Consult current National Emergency Response Guide Book (NAERG) for appropriate spill measures if necessary. Extinguish all ignition sources. Stop leak if safe to do so. Dike spilled material. Use appropriate inert absorbent material to absorb spilled product. Collect used absorbent for later disposal. Ventilate area. Ensure clean-up personnel wear appropriate personal protective equipment. Avoid breathing vapours or mists of material. Avoid contact with spilled material. Avoid contaminating sewers, streams, rivers and other water courses with spilled material. Notify appropriate authorities immediately.
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Section 7. Handling and Storage

Handling	Avoid contact with any sources of ignition, flames, heat, and sparks. Avoid confined spaces and areas with poor ventilation. Avoid skin contact. Avoid eye contact. Avoid inhalation of product vapours or mists. Do not ingest this product. Wear proper personal protective equipment (See Section 8). Empty containers may contain product residue. Do not pressure, cut, heat, or weld empty containers. Do not reuse containers without commercial cleaning and/or reconditioning. Personnel who handle this material should practice good personal hygiene during and after handling to help prevent accidental ingestion of this product. Properly dispose of contaminated leather articles including shoes that cannot be decontaminated.
Storage	Store in dry, cool, well-ventilated area. Store away from heat and sources of ignition. Keep container tightly closed. Store away from incompatible and reactive materials (See section 5 and 10).

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	Chemical splash goggles should be worn when handling this material.
Body	If this material may come into contact with the body during handling and use, we recommend wearing appropriate protective clothing to prevent contact with the skin. (Contact your PPE provider for more information).
Respiratory	A minimum of NIOSH-approved air-purifying respirator with a organic vapour cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a positive-pressure, air-supplied respirator if there is any potential for uncontrolled releases, exposure levels are unknown, or any other circumstances where air-purifying respirators may not provide adequate protection.
Hands	If this material may come in contact with the hands during handling and use, we recommend wearing gloves of the following material(s): Neoprene, Polyvinyl chloride (PVC). Consult your PPE provider for breakthrough times and the specific glove that is best for you based on your use patterns.
Feet	Wear appropriate footwear to prevent product from coming in contact with feet and skin.

Section 9. Physical and Chemical Properties

Physical State and Clear viscous liquid.	Viscosity	Not available
Appearance		
Colour Green.	Pour Point	Not available
Odour Odourless.	Softening Point	Not applicable.
Odour Threshold Not available	Dropping Point	Not applicable.
Boiling Point 129 to 197°C (264 to 387°F)	Penetration	Not applicable.
Density 1.07 to 1.145 (Water = 1)	Oil / Water Dist. Coefficient	Not available

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Vapour Density	2.1 (Air=1).	Ionicity (In water)	Not available
Vapour Pressure	0.06 mmHg @ 20°C (68°F).	Dispersion Properties	Not available
Volatility	0% (w/w)	Solubility	Soluble in water, methanol and diethyl ether.

Section 10. Stability and Reactivity

Corrosivity	Not available		
Stability	The product is stable.	Hazardous Polymerization	Will not occur under normal working conditions.
Incompatible Substances / Conditions to Avoid	Reactive with oxidizing agents, acids, alkalis, perchloric acid, phosphorus and silvered copper wires carrying DC current.	Decomposition Products	May release CO ₂ , acid smoke and irritating vapours when heated to decomposition.

Section 11. Toxicological Information

Routes of Entry	Skin contact, eye contact, inhalation and ingestion.
Acute Lethality	<u>Ethylene glycol (107-21-1):</u> LD50: 4700 mg/kg (oral/rat). LD50: 9630 mg/kg (dermal/rabbit). <u>Sodium tetraborate pentahydrate (12179-04-3):</u> LD50: 3200-3600 mg/kg (oral/rat) (Boric acid). [Sodium tetraborate pentahydrate]
Chronic or Other Toxic Effects	
Dermal Route:	Short-term exposure is expected to cause only slight irritation, if any.
Inhalation Route:	Inhalation of this product may cause respiratory tract irritation.
Oral Route:	Extremely dangerous in case of ingestion.
Eye Irritation/Inflammation:	This product contains a component (at >= 1%) that can cause eye irritation. Therefore, this product is considered to be an eye irritant.
Immunotoxicity:	Not available
Skin Sensitization:	Contact with this product is not expected to cause skin sensitization, based upon the available data and the known hazards of the components.
Respiratory Tract Sensitization:	Contact with this product is not expected to cause respiratory tract sensitization, based upon the available data and the known hazards of the components.
Mutagenic:	This product is not known to contain any components at >= 0.1% that have been shown to cause mutagenicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a mutagen.
Reproductive Toxicity:	Borates are possible reproductive toxins based upon available animal ingestion studies in several species. These studies usually involved high doses, over prolonged periods of time. A human study following occupational exposure to borate by inhalation concluded that, no adverse effects to reproduction were found in this population, under the conditions of this study.
Teratogenicity/Embryotoxicity:	This product contains a component(s) at >= 0.1% that has been shown to cause teratogenicity and/or embryotoxicity in laboratory tests. Therefore, this product is considered to be a teratogen/embryotoxin (Ethylene glycol).
Carcinogenicity (ACGIH):	ACGIH A4: not classifiable as a human carcinogen (Ethylene glycol). This product is not known to contain any chemicals at reportable quantities that are listed as Group A1, A2, or A3 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):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by IRIS.
Carcinogenicity (OSHA):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by OSHA.
Other Considerations	The substance may be toxic to kidneys and liver. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

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Section 12. Ecological Information

Environmental Fate	Not available	Persistence/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	Spent/ used/ waste product may meet the requirements of a hazardous waste. Consult your local or regional authorities. Ensure that waste management processes are in compliance with government requirements and local disposal regulations.
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Section 14. Transport Information

TDG Classification	Not a hazardous material for transport according to the TDG Regulations. (Canada)	Special Provisions for Transport	Not applicable.
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Section 15. Regulatory Information

Other Regulations	All of the components of this product are on the Domestic Substances List (DSL), are considered to be on the DSL, or are exempt from the New Substance Notification (NSN) requirements.																																	
	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 (Europe)	Not evaluated.	HCS (U.S.A.)	CLASS: Target organ effects. CLASS: Irritating substance.																															
ADR (Europe) (Pictograms)	NOT EVALUATED FOR EUROPEAN TRANSPORT NON ÉVALUÉ POUR LE TRANSPORT EUROPÉEN	DOT (U.S.A.) (Pictograms)																																
HMS (U.S.A.)	<table><tr><td>Health Hazard</td><td>2</td></tr><tr><td>Fire Hazard</td><td>1</td></tr><tr><td>Reactivity</td><td>0</td></tr><tr><td>Personal Protection</td><td>H</td></tr></table>	Health Hazard	2	Fire Hazard	1	Reactivity	0	Personal Protection	H	NFPA (U.S.A.)	<table><tr><td rowspan="2">Health</td><td rowspan="2"></td><td>Fire Hazard</td><td>Rating</td><td>0 Insignificant</td></tr><tr><td>Reactivity</td><td></td><td>1 Slight</td></tr><tr><td></td><td></td><td>Specific hazard</td><td></td><td>2 Moderate</td></tr><tr><td></td><td></td><td></td><td></td><td>3 High</td></tr><tr><td></td><td></td><td></td><td></td><td>4 Extreme</td></tr></table>	Health		Fire Hazard	Rating	0 Insignificant	Reactivity		1 Slight			Specific hazard		2 Moderate					3 High					4 Extreme
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Section 16. Other Information

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

Glossary

ACGIH - American Conference of Governmental Industrial Hygienists	IRIS - Integrated Risk Information System
ADR - Agreement on Dangerous goods by Road (Europe)	LD50/LC50 - Lethal Dose/Concentration at 50%
ASTM - American Society for Testing and Materials	LDLo/LCLo - Lowest Published Lethal Dose/Concentration
BOD5 - Biological Oxygen Demand in 5 days	NAERG96 - North American Emergency Response Guide Book (1996)
CAN/CSA B149.2 - Propane Installation Code	NFPA - National Fire Protection Association
CAS - Chemical Abstract Services	NIOSH - National Institute for Occupational Safety & Health
CEPA - Canadian Environmental Protection Act	NPRI - National Pollutant Release Inventory
CERCLA - Comprehensive Environmental Response, Compensation and Liability Act	NSNR - New Substance Notification Regulations (Canada)
CFR - Code of Federal Regulations	NTP - National Toxicology Program
CHIP - Chemical Hazard Information and Packaging Approved Supply List	OSHA - Occupational Safety & Health Administration
CNS - Central Nervous System	PEL - Permissible Exposure Limit
COD5 - Chemical Oxygen Demand in 5 days	RCRA - Resource Conservation and Recovery Act
CPR - Controlled Products Regulations	RTECS - Registry of Toxic Effects of Chemical Substances
DOT - Department of Transport	SARA - Superfund Amendments and Reorganization Act
DSD - Dangerous Substances Classification and Labeling (Europe)	SD - Single Dose
DSD/DPD - Dangerous Substances or Dangerous Preparations Directives (Europe)	STEL - Short Term Exposure Limit (15 minutes)
DSL - Domestic Substance List	TDG - Transportation Dangerous Goods (Canada)
EEC/EU - European Economic Community/European Union	TDLo/TCLo - Lowest Published Toxic Dose/Concentration
EINECS - European Inventory of Existing Commercial Chemical Substances	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

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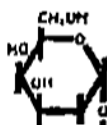
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EPA - Environmental Protection Agency EPCRA - Emergency Planning and Community Right to Know Act FDA - Food and Drug Administration FIFRA - Federal Insecticide, Fungicide and Rodenticide Act HCS - Hazard Communication Standard HMIS - Hazardous Material Information System IARC - International Agency for Research on Cancer		WHMIS - Workplace Hazardous Material Information System
For Copy of MSDS Internet: www.petro-canada.ca/msds Canada-wide: telephone: 1-800-668-0220; fax: 1-800-837-1228 For Product Safety Information: (805) 804-4762		Prepared by Product Safety - JDM on 8/11/2005. Data entry by Product Safety - RS.
<i>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.</i>		

File: Poly-Drill

FAX NO.: 4032557185

May. 04 2005 12:00PM P2



Poly-Drill Drilling Systems
1824 - 104 Avenue, S.W.
Calgary, Alberta, Canada T2W-0A8
(403) 259-5112 FAX (403) 255-7185
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poly-drill.com

MATERIAL SAFETY DATA SHEET/FICHE SIGNALÉTIQUE

1. PRODUCT IDENTIFICATION

PRODUCT TRADE NAME: Poly-Drill 133-X
PRODUCT DESCRIPTION: LIQUID ANIONIC POLYMER
CHEMICAL DESCRIPTION: Polymer, Surfactant(s), Water, Hydrocarbon solvent
UPDATED: March 15, 2004

NFPA704M/WHMIS RATING

HEALTH: 0/1 FLAMMABILITY: 1/1 REACTIVITY: 0/0 OTHER:
0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

2. COMPOSITION

A liquid polymer: Evaluation of the ingredient(s) has found no ingredient(s) hazardous as per WHMIS regulations. None of the substances in this product are hazardous.

3. PHYSICAL DATA

Flash Point: >100°C (PMCC)
Specific Gravity (@ 25°C.): 1.08
Solubility in Water: Emulsifiable
pH: 8.1 (1.0% solution)
Freeze Point: -10 °C (14 Degrees F)
Density (g/ml): 1.08 at 25 °C
Physical State: Liquid
Appearance: Blue liquid
Odor: Hydrocarbon

Note: These physical properties are typical values for this product.

4. FIRE AND EXPLOSION DATA

INCOMPATIBILITY: Avoid contact with strong oxidizers (eg. Chlorine, peroxides, chromates, nitric acid, perchlorates, concentrated oxygen, permanganates) which can generate heat, fires, explosions and the release of toxic fumes.

THERMAL DECOMPOSITION PRODUCTS: In the event of combustion CO, oxides of carbon (COx), oxides of nitrogen (NOx) may be formed. Do not breathe smoke or fumes. Wear suitable protective equipment.

5. FIRE FIGHTING MEASURES

FLASH POINT: >100°C (PMCC)

From: Daily Drill

FAX NO.: 4032557185

May. 04 2005 12:00PM P3

EXTINGUISHING MEDIA: Based on the NFPA guide, use dry chemical, foam, carbon dioxide or other extinguishing agent suitable for Class B fires. Use water to cool containers exposed to fire. For larger fires, use water spray or fog, thoroughly drenching the burning material.

UNSUITABLE EXTINGUISHING MEDIA:
Do not use water unless flooding amounts are available.

UNUSUAL FIRE AND EXPLOSION HAZARD: May evolve oxides of nitrogen (NOx) under fire conditions.

6. HEALTH HAZARD DATA

EMERGENCY OVERVIEW:

CAUTION: May cause irritation to skin and eyes. Avoid contact with skin, eyes and clothing. Do not take internally.

Empty containers may contain residual product. Do not reuse container unless properly reconditioned.

PRIMARY ROUTE(S) OF EXPOSURE: Eye & Skin

EYE CONTACT: Can cause mild to moderate irritation.

SKIN CONTACT: Can cause mild, short-lasting irritation.

SYMPTOMS OF EXPOSURE: A review of available data does not identify any symptoms from exposure not previously mentioned.

AGGRAVATION OF EXISTING CONDITIONS: A review of available data does not identify any worsening of existing conditions.

7. EMERGENCY AND FIRST AID PROCEDURES

SKIN: Wash exposed area with soap and water. If irritation or abnormalities persist, call a physician.

EYE: Immediately flush eyes with water for 15 minutes. If irritation or abnormalities persist, call a physician.

INHALATION: Remove to fresh air. If breathing becomes difficult, give oxygen and call a physician.

INGESTION: Do not induce vomiting. Call a physician immediately.

CAUTION: If unconscious, having trouble breathing or in convulsions, do not induce vomiting or give water. Call for medical assistance immediately.

8. HANDLING, ACCIDENTAL RELEASE MEASURES & DISPOSAL CONSIDERATIONS

Storage: Keep container tightly closed when not in use.

DISPOSAL:

In Ontario, the waste class under Regulation 347 is: 233L

SMALL SPILLS:

Soak up spill with absorbent material. Place residues in a suitable, covered, properly labeled container. Wash affected area.

LARGE SPILLS:

Contain liquid using absorbent material, by digging trenches or by diking. Reclaim into recovery or salvage drums or tank truck for proper disposal. Contact approved waste hauler for disposal of contaminated recovered material. Dispose of material in compliance with regulations indicated.

Dispose of wastes in an approved incinerator or waste treatment/disposal site, in accordance with all applicable regulations. Do not dispose of wastes in local sewer or with normal garbage.

FROM: Poly-Drill

FAX NO.: 4032557185

May. 04 2005 12:01PM P4

ENVIRONMENTAL PRECAUTIONS

This product should NOT be directly discharged into lakes, ponds, streams, waterways or public water supplies.

As a non-hazardous liquid waste, it should be solidified with stabilizing agents (such as sand, fly ash, or cement) so that no free liquid remains before disposal to an industrial waste landfill. A non-hazardous liquid waste can also be incinerated in accordance with local, state, provincial and federal regulations.

9. INDUSTRIAL HYGIENE CONTROL MEASURES**OCCUPATIONAL EXPOSURE LIMITS:**

This product does not contain any substance that has an established exposure limit.

Respiratory Protection: None normally required.

For large spills, entry into large tanks, vessels or enclosed small spaces with inadequate ventilation, a positive pressure, self-contained breathing apparatus is recommended.

Ventilation: General ventilation is recommended

Eye Protection: Safety glasses, if personally preferred

Gloves: Generally not necessary. Personal preference. Examples of impermeable gloves available on the market are neoprene, nitrile, PVC, natural rubber, viton, and butyl (compatibility studies have not been performed).

If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

10. TOXICOLOGICAL PROPERTIES**SENSITIZATION:**

This product is not expected to be a sensitizer.

A "LC50-96" Pass/Fail Bioassay test. This test determines the lethality of a fluid on young aquatic organisms. The fluid fails if 50% or more of the animals are dead after 96 hours in the fluid.

96 hour static acute LC50 to Rainbow Trout = Greater than 1,000 mg/L

96 hour no observed effect concentration = 125 mg/L based on no mortality or abnormal effects

96 hour static acute LC50 to Sheepshead Minnow = Greater than 1,000 mg/L

96 hour no observed effect concentration = 1,000 mg/L (highest concentration tested) based on no mortality or abnormal effects.

96 hour static acute LC50 to Mysid Shrimp = 400 mg/L

96 hour no observed effect concentration = 180 mg/L based on no mortality or abnormal effects.

96 hour static acute LC50 to Daphnia Magna = 400 mg/L

96 hour no observed effect concentration = 58 mg/L (lowest concentration tested) based on no mortality or abnormal effects.

Microtoxicity

The Microtox bioassay has been established as the reference test for mud additive toxicity testing.

Test Method: Luminescent Bacteria, LC50@ 15 min

Reference: Appendix 1: Microtox Bioassay Procedure, Drilling Waste Management, Guide G50. 1993. Alberta Energy and Utilities Board, Calgary, AB, Canada.

Sample: Poly Drill 1330, sample #87324-1 for test #970723, 97/05/09 by D. Lintott

Preparation: Sample was diluted to 2 g/L, which formed thick, slightly cloudy liquid. The sample was then centrifuged for 1 hour.

Name: Poly-Drill

FAX NO. : 4032557185

May. 04 2005 12:01PM P5

Test Results:

SAMPLE	TREATMENT	CTC	IC20	IC50	RESULT
87324-1	None	N/A	14 (9-22)	>91	PASS

The following results are for a 1% aqueous solution of product.

CARCINOGENICITY:

None of the substances in this product are listed as carcinogens by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP) or the American Conference of Government Industrial Hygienists (ACGIH).

HUMAN HAZARD CHARACTERIZATION:

Based on our Hazard Characterization, the potential human hazard is: LOW

ENVIRONMENTAL HAZARD AND EXPOSURE CHARACTERIZATION:

Based on our Hazard Characterization, the potential environmental hazard is: LOW.

11. DEPARTMENT OF TRANSPORTATION INFORMATION

PROPER SHIPPING NAME/HAZARD CLASS MAY VARY BY PACKAGING, PROPERTIES, AND MODE OF TRANSPORTATION. TYPICAL PROPER SHIPPING NAMES FOR THIS PRODUCT ARE:

ALL TRANSPORTATION MODES: PRODUCT IS NOT REGULATED DURING TRANSPORTATION

Shipping Name: Liquid Drilling Additive

Hazard Class: Not hazardous

Cautionary Labeling: None required

14. OTHER INFORMATION

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

Material Safety Data / Fiche signalétique

WESTCOAST DRILLING SUPPLIES LTD.
8068 River Way, Delta, British Columbia,
Canada V4C 1L3
Ph. (604) 940-8050 Fax (604) 940-6080

EMERGENCY 1-800-665-8845

SECTION I: IDENTIFICATION OF PRODUCT

PRODUCT NAME: 550X® POLYMER
CHEMICAL FAMILY: Anionic water soluble polymer
PRODUCT USE: Drilling mud additive
WHMIS CLASSIFICATION: Not WHMIS regulated

TRANSPORTATION OF DANGEROUS GOODS (TDGR)

CLASSIFICATION: Not applicable
PACKAGE GROUP: Not applicable
UN NUMBER (PIN): Not applicable

SECTION II: HAZARDOUS INGREDIENTS

INGREDIENT	PERCENTAGE	CAS NUMBER	LD50	LC50
Copolymer of Acrylamide and Sodium Acrylate		25085-02-3		
Acrylamide	0.1000	79-06-1		

SECTION III: HEALTH HAZARDS

ROUTES OF ENTRY
(XXX) Skin (XXX) Eye Contact (XXX) Inhalation (XXX) Ingestion

THRESHOLD LIMIT VALUE: Not determined

SKIN CONTACT: No effects of exposure expected due to contact. Prolonged contact may cause slight skin irritation or dermatitis in some individuals.

EYE CONTACT: No effects of exposure expected with the exception of mechanical irritation.

INGESTION: No adverse effects expected.

INHALATION: Product may swell in throat causing choking. May cause sneezing, slight irritation of nose and throat.

SECTION IV: FIRST AID MEASURES

SKIN CONTACT: Wash with soap and water as a precaution. In case of persistent skin irritation, consult a physician.

EYE CONTACT: Rinse thoroughly with plenty of water, also under the eyelid. In case of persistent eye irritation, consult a physician.

INGESTION: The product is not considered toxic based on studies on laboratory animals. Do not induce vomiting, give 2-3 glasses of water.

INHALATION: Move to fresh air. If not breathing give artificial respiration. Seek medical attention.

Material Safety Data / Fiche signalétique

WESTCOAST DRILLING SUPPLIES LTD.
8068 River Way, Delta, British Columbia,
Canada V4C 1L8
Ph: (604) 940-6050 Fax (604) 940-8080

EMERGENCY 1-800-565-6645

550X® POLYMER

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SECTION V: PHYSICAL DATA

APPEARANCE	White granular solid
ODOR	None
SPECIFIC GRAVITY	0.8 at 25° C (77 F)
BOILING POINT (°C)	Not applicable
MELTING POINT (°C)	Not determined
SOLUBILITY IN WATER	Forms a gel
PERCENT VOLATILE BY VOLUME	Not determined
EVAPORATION RATE	Not determined
VAPOR PRESSURE (mm Hg)	Not determined
VAPOR DENSITY (Air=1)	Not determined
pH	4 - 9 @ 5g/L

SECTION VI: FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	93° C (200 F)
FLAMMABLE LIMITS	Not determined
EXTINGUISHING MEDIA	Dry Chemical, Carbon Dioxide
SPECIAL FIRE FIGHTING PROCEDURES	Aqueous solutions or powders that become wet render surfaces extremely slippery.
UNUSUAL FIRE AND EXPLOSION HAZARDS	No special equipment required.

SECTION VII: REACTIVITY DATA

STABILITY	[XOX] Stable [] Unstable
INCOMPATIBILITY (Conditions to avoid)	Oxidizing agents
CONDITIONS OF REACTIVITY	Not known
HAZARDOUS DECOMPOSITION PRODUCTS	NO _x , CO _x
HAZARDOUS POLYMERIZATION	[XOX] Will not occur [] May occur

Material Safety Data / Fiche signalétique

WESTCOAST DRILLING SUPPLIES LTD.
6080 River Way, Delta, British Columbia,
Canada V4C 1L8
Ph: (604) 540-6050 Fax: (604) 840-6080

EMERGENCY 1-800-645-0845

SSOX® POLYMER

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SECTION VIII: PREVENTIVE MEASURES**SPECIAL PROTECTION INFORMATION****RESPIRATORY PROTECTION**

Dust masks are recommended where concentration of total dust is more than 10 mg/m³

VENTILATION

General mechanical

PROTECTIVE GLOVES

Chemically resistant

EYE PROTECTION

Safety glasses with side shields

OTHER PROTECTIVE EQUIPMENT (Specify)

Not known

ACCIDENTAL RELEASE MEASURES**STEPS TO BE TAKEN IN CASE THE MATERIAL IS SPILLED OR RELEASED**

Do not flush with water. Clean up promptly by sweeping or vacuum.
Keep in suitable and closed containers for disposal.
After cleaning, flush away trace with water.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Avoid contact with skin and eyes. Avoid dust formation. Do not breathe dust. Wash hands before breaks and at the end of the day. Keep in a cool dry place (0 - 30 °C)

WASTE DISPOSAL METHOD

Can be land filled or incinerated, when in compliance with local, provincial and federal regulations.

SECTION IX: TOXICOLOGICAL INFORMATION**CARCINOGENICITY**

Not determined

REPRODUCTIVE TOXICITY

Not determined

TERATOGENICITY

Not determined

MUTAGENICITY

Not determined

DEVELOPMENTAL TOXICITY

Not determined

CHRONIC EFFECTS:

This product does not contain any ingredient designated by IARC, NTP, ACOIH or OSHA as probable or suspected human carcinogens.

Material Safety Data / Fiche signalétique

WESTCOAST DRILLING SUPPLIES LTD.
 8069 River Way, Delta, British Columbia,
 Canada V40 1L3
 Ph. (604) 940-8050 Fax (604) 940-5080

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SECTION X: PREPARATION

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

DATE ISSUED: August, 2001

DATE REVISED: August, 1998

BY: Product Safety Committee

AMENDMENT

HAZARDOUS INGREDIENTS (SS0X)

Material or component	WT%	Hazard data
COPOLYACRYLAMIDE/SODIUM ACRYLATE		Not considered hazardous

ENVIRONMENTAL

DEGRADABILITY/AQUATIC TOXICITY:	Not determined
OCTANOL/WATER PARTITION COEFFICIENT	Not determined
WASTE DISPOSAL METHODS:	Incineration and/or disposal in Chemical Landfill. Disposer must comply with federal, provincial and local disposal or discharge laws.

RCRA STATUS OF UNUSED MATERIAL
 IF DISCARDED:

Not a "Hazardous Waste"
 Not available

REPORTABLE QUANTITY:
 THRESHOLD PLANNING QUANTITY:
 TOXIC CHEMICAL RELEASE REPORTING:

EPA 40 CFR (CHRCIA 102):	Not applicable
EPA 40 CFR 355 (SERA 301-304):	Not applicable
EPA 40 CFR 372 (SERA 311-313):	Not applicable

EPA HAZARD CLASSIFICATION CODE:

ACUTE - Yes	CHRONIC - No
FIRE - No	PRESSURE - No
	REACTIVE - No

HMS AND NFPA RATINGS:
 HEALTH
 FLAMMABILITY
 REACTIVITY
 SPECIAL

HMS	NFPA
1	1
0	0
1	1
Not applicable	Not applicable

Calcium Chloride, Dihydrate

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Material Safety Data Sheet

Section 1. Product and Company Identification

Product Name Calcium Chloride, Dihydrate
Manufacturer EMD Chemicals Inc
 P.O. Box 70
 480 Demarest Road
 Gibbstown, NJ 08027
 Prior to January 1, 2003 EMD Chemicals Inc. was EM
 Industries, Inc. or EMI Science, Division of EM Industries
 Inc.

Product Code CX0134

Effective Date 8/30/2004

For More Information Call
 856-424-9300 Technical Service
 Monday-Friday: 8:00 AM - 5:00 PM

In Case of Emergency Call
 800-424-9300 CHEMTREC (USA)
 613-696-6666 CANUTEC (Canada)
 24 Hours/Day; 7 Days/Week

Synonym CALCIUM CHLORIDE
Material Uses Analytical reagent
Chemical Family Inorganic salt

Section 2. Composition and Information on Ingredients

Component

CALCIUM CHLORIDE, DIHYDRATE

CAS #

10035-04-8

% by Weight
 100

Section 3. Hazards Identification

Physical State and Appearance Solid. (Powder or flakes solid. Granular solid)

Emergency Overview

CAUTION!

CAUSES EYE IRRITATION

MAY CAUSE SKIN IRRITATION.

Routes of Entry

Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Potential Acute Health Effects

Eyes Hazardous in case of eye contact (irritant). Inflammation of the eye is characterized by redness, watering, and itching.

Skin May be hazardous in case of skin contact (irritant). Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Inhalation No known acute effects of this product resulting from inhalation.

Ingestion Irritating to mouth, throat and stomach. Ingestion can cause nausea and vomiting.

Potential Chronic Health Effects

Carcinogenic Effects This material is not known to cause cancer in animals or humans.

Additional information See Toxicological Information (section 11)

Medical Conditions

Aggravated by

Overexposure:

Repeated or prolonged exposure is not known to aggravate medical condition.

Section 4. First Aid Measures

Eye Contact

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

Skin Contact

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

Inhalation

Thoroughly clean shoes before reuse. Get medical attention. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion

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

Section 5. Fire Fighting Measures

Flammability of the Product May be combustible at high temperature

Auto-ignition Temperature Not available.

Calcium Chloride, Dihydrate

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Flash Points	Not available
Flammable Limits	Not available
Products of Combustion	These products are carbon oxides (CO, CO ₂), halogenated compounds. Some metallic oxides.
Fire Hazards in Presence of Various Substances	Not available
Explosion Hazards in Presence of Various Substances	Risks of explosion of the product in presence of static discharge: No
Fire Fighting Media and Instructions	Risks of explosion of the product in presence of mechanical impact: No SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.
Protective Clothing (Fire)	Be sure to use an approved/certified respirator or equivalent.
Special Remarks on Fire Hazards	Not available
Special Remarks on Explosion Hazards	Not available

Section 6. Accidental Release Measures

Small Spill and Leak	Use appropriate tools to put the spilled solid in a convenient waste disposal container.
Large Spill and Leak	Use a shovel to put the material into a convenient waste disposal container.
Spill Kit Information	No specific spill kit required for this product.

Section 7. Handling and Storage

Handling	Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Do not ingest. Do not breathe dust.
Storage	Keep container tightly closed. Keep container in a cool, well-ventilated area.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
Personal Protection	Eyes: Splash goggles. Body: Lab coat. Respiratory: Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Hands: Gloves. Feet: Not applicable.

Protective Clothing
(Pictograms)



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

Product Name	Exposure Limits
CALCIUM CHLORIDE, DIHYDRATE	Not available

Section 9. Physical and Chemical Properties

Odor	Not available.
Color	White.
Physical State and Appearance	Solid (Powder or flakes solid, granular solid.)
Molecular Weight	147.02 g/mole
Molecular Formula	CaCl ₂ · 2H ₂ O
pH	Not available.
Boiling/Condensation Point	Not available.
Melting/Freezing Point	Not available.
Specific Gravity	Not available.
Vapor Pressure	Not available.
Vapor Density	Not available.
Odor Threshold	Not available.
Evaporation Rate	Not available.
LogKow	Not available.
Solubility	Soluble in water.

Calcium Chloride, Dihydrate

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Section 10. Stability and Reactivity

Stability and Reactivity	The product is stable
Conditions of Instability	Not available
Incompatibility with Various Substances	Reactive with metals, moisture
Rem/Incompatibility	Not available
Hazardous Decomposition Products	These products are halogenated compounds.
Hazardous Polymerization	Will not occur.

Section 11. Toxicological Information

RTECS Number:	Calcium Chloride, Dihydrate	EV0810000
Toxicity	LD50: Not available LC 50: Not available	
Chronic Effects on Humans	Not available	
Acute Effects on Humans	Hazardous in case of eye contact (irritant). Inflammation of the eye is characterized by redness, watering, and itching. May be hazardous in case of skin contact (irritant). Skin inflammation is characterized by itching, swelling, reddening, or, occasionally, blistering.	
Synergistic Products (Toxicologically)	Not available	
Irritation	Drum Test: Not available;	
Sensitization	Not available	
Carcinogenic Effects	This material is not known to cause cancer in animals or humans.	
Toxicity to Reproductive System	Not available	
Teratogenic Effects	Not available	
Mutagenic Effects	Tests on laboratory animals for mutagenic effects are cited in Registry of Toxic Effects of Chemical Substances (RTECS).	

Section 12. Ecological Information

Estimability	Not available
BOD5 and COD	Not available.
Toxicity of the Products of Biodegradation	The products of degradation are more toxic than the product itself.

Section 13. Disposal Considerations

EPA Waste Number	Not available
Treatment	Material does not have an EPA Waste Number and is not a listed waste, however consultation with a permitted waste disposal site (TSD) should be accomplished. Always contact a permitted waste disposal (TSD) to assure compliance with all current local, state, and Federal Regulations.

Section 14. Transport Information

DOT Classification	Proper Shipping Name: CHEMICALS, N.O.S. RQ: Not applicable
TDG Classification	Not available
IMO/IMDG Classification	Proper Shipping Name: CHEMICALS, N.O.S. RQ: Not applicable
ICAO/IATA Classification	Not available

+ Section 15. Regulatory Information

U.S. Federal Regulations	TSCA 8(h) inventory: Calcium Chloride, Dihydrate SARA 302/304/311-312 extremely hazardous substances: No products were found. SARA 302/304 emergency planning and notification: No products were found. SARA 302/304/311-312 hazardous chemicals: Calcium Chloride, Dihydrate SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Calcium Chloride, Dihydrate: Immediate (Acute) Health Hazard SARA 313 toxic chemical notification and release reporting: No products were found. Clean Water Act (CWA) 307: No products were found. Clean Water Act (CWA) 311: No products were found. Clean air act (CAA) 112 accidental release prevention: No products were found. Clean air act (CAA) 112 regulated flammable substances: No products were found.
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Calcium Chloride, Dihydrate

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WHMIS (Canada)	* International (GHS) 112 regulated toxic substances: No products were found.
	Class 1B-2B: Material causing other toxic effects (TOXIC)
	* EPA DSL: CALCIUM CHLORIDE
	This product has been classified in accordance with the hazard criteria of the Controlled Product Regulations and the MSDS contains all required information.
International Regulations	
EINECS	Not available
OSCL (EEC)	R38: Irritating to skin
	R41: Risk of serious damage to eye
International Lists	Australia (NICNAS): Calcium Chloride, Dihydrate
	Japan (MITI): Calcium Chloride, Dihydrate
	Philippines (RA6969): Calcium chloride, Dihydrate
State Regulations	China: No products were found
	No products were found
	California prop. 65: No products were found

Section 16. Other Information

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

0 Fire Hazard
Health 0 0 Reactivity
Specific Hazard

Changed Since Last
Revision +
Notice to Reader

The statements contained herein are based upon technical data that EMD Chemicals Inc. believes to be reliable, are offered for information purposes only and as a guide to the appropriate precautionary and emergency handling of the material by a properly trained person having the necessary technical skills. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to ensure proper use, storage and disposal of these materials and the safety and health of employees and customers and the protection of the environment. EMD CHEMICALS INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE, WITH RESPECT TO THE INFORMATION HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS.