

Personal Protection H

Specific hazard

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 &amp; Central Canada, telephone: 1-800-668-0220; fax: 1-800-837-1228

Quebec &amp; Eastern Canada, telephone: 514-640-8308; fax: 514-640-8385

For Product Safety Information: (905) 804-4752








Prepared by Product Safety - JDW on 6/9/2004.

Data entry by Product Safety - RS.

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## Material Safety Data Sheet

WHMIS (Pictograms)	WHMIS (Classification)	Protective Clothing	TDG (pictograms)
 	<b>B-3, D-2B</b>	   	

### Section 1. Chemical Product and Company Identification

<b>Product Name</b>	<b>DIESEL FUEL</b>	<b>Code</b>	W104, W293 SAP: 120, 121, 122, 287
<b>Synonym</b>	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, Ultra Low Sulphur Diesel, ULS Diesel, Mining Diesel, Mining Diesel Special, Mining Diesel Special LS, High Flash Mining Diesel, Furnace Oil, Stove Oil.	<b>Validated on</b>	2/6/2004.
<b>Manufacturer</b>	PETRO-CANADA P.O. Box 2844 Calgary, Alberta T2P 3E3	<b>In case of Emergency</b>	Petro-Canada: 403-296-3000 Canutec Transportation: 613-996-6666 Poison Control Centre: Consult local telephone directory for emergency number(s).
<b>Material Uses</b>	Diesel fuels are distillate fuels suitable for use in high and medium speed internal combustion engines of the compression ignition type. Mining Diesel has a higher flash point requirement, for safe use in underground mines.		

### Section 2. Composition and Information on Ingredients

			Exposure Limits (ACGIH)		
Name	CAS #	% (V/V)	TLV-TWA(8 h)	STEL	CEILING
1) Diesel oil.	68334-30-5	>99.9	100 mg/m <sup>3</sup> (as total hydrocarbons) *	Not established	Not established
2) Proprietary additives.	Not available	<0.1	Not established	Not established	Not established
Aromatic content is 50% maximum (benzene: nil). Sulphur content is 0-0.50%.					
<b>Manufacturer Recommendation</b>	* Avoid prolonged or repeated skin contact to diesel fuels which can lead to dermal irritation and may be associated with an increased risk of skin cancer.				
<b>Other Exposure Limits</b>	Consult local, state, provincial or territory authorities for acceptable exposure limits.				

### Section 3. Hazards Identification.

<b>Potential Health Effects</b>	Combustible liquid. Exercise caution when handling this material. Contact with this product may cause skin and eye irritation. Prolonged or repeated contact may cause skin irritation, defatting, drying and dermatitis. Inhalation of this product may cause respiratory tract irritation and Central Nervous System (CNS) Depression, symptoms of which may include; weakness, dizziness, slurred speech, drowsiness, unconsciousness and in cases of severe overexposure; coma and death. Ingestion of this product may cause gastro-intestinal irritation. Aspiration of this product may result in severe irritation or burns to the respiratory tract. For more information refer to Section 11 of this MSDS.
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### Section 4. First Aid Measures

<b>Eye Contact</b>	IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Seek medical attention.
<b>Skin Contact</b>	Remove contaminated clothing - launder before reuse. Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Seek medical attention.
<b>Inhalation</b>	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.
<b>Ingestion</b>	DO NOT induce vomiting because of danger of aspirating liquid into lungs. Seek medical attention.
<b>Note to Physician</b>	Not available

**Section 5. Fire-fighting Measures**

<b>Flammability</b>	Class II - combustible liquid (NFPA).	<b>Flammable Limits</b>	LOWER: 0.7%, UPPER: 6% (NFPA)
<b>Flash Points</b>	Diesel Fuel: Closed Cup: >40°C (>104°F) Marine Diesel Fuel: Closed Cup: >60°C (>140°F) Mining Diesel: Closed Cup: 52°C (126°F)	<b>Auto-Ignition Temperature</b>	225°C (437°F)
<b>Fire Hazards in Presence of Various Substances</b>	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.	<b>Explosion Hazards in Presence of Various Substances</b>	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.
<b>Products of Combustion</b>	Carbon oxides (CO, CO <sub>2</sub> ), nitrogen oxides (NO <sub>x</sub> ), sulphur oxides (SO <sub>x</sub> ), sulphur compounds (H <sub>2</sub> S), water vapour (H <sub>2</sub> O), smoke and irritating vapours as products of incomplete combustion. See Section 11 (Other Considerations) for information regarding the toxicity of the combustion products.		
<b>Fire Fighting Media and Instructions</b>	<p>NAERG96, GUIDE 128, Flammable liquids (Non-polar/Water-immiscible). CAUTION: This product has a moderate flash point above 40°C: Use of water spray when fighting fire may be inefficient.</p> <p>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.</p> <p>SMALL FIRES: Dry chemical, CO<sub>2</sub>, 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.</p> <p>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.</p>		

**Section 6. Accidental Release Measures**

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

<b>Handling</b>	COMBUSTIBLE MATERIAL. Handle with care. Avoid contact with any sources of ignition, flames, heat, and sparks. Avoid skin contact. Avoid eye contact. Avoid inhalation of product vapours or mists. Empty containers may contain product residue. Do not pressurize, 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. Avoid confined spaces and areas with poor ventilation. Ensure all equipment is grounded/bonded. Wear proper personal protective equipment (See Section 8).
<b>Storage</b>	Store away from heat and sources of ignition. Store in dry, cool, well-ventilated area. Store away from incompatible and reactive materials (See section 5 and 10). Ensure the storage containers are grounded/bonded.

**Section 8. Exposure Controls/Personal Protection**

<b>Engineering Controls</b>	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.
<b>Personal Protection</b>	<b>- The selection of personal protective equipment varies, depending upon conditions of use.</b>
<b>Eyes</b>	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.
<b>Body</b>	Wear appropriate clothing to prevent skin contact. As a minimum long sleeves and trousers should be worn.
<b>Respiratory</b>	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.
<b>Hands</b>	Wear appropriate chemically protective gloves. When handling hot product ensure gloves are heat resistant and insulated.
<b>Feet</b>	Wear appropriate footwear to prevent product from coming in contact with feet and skin.

**Section 9. Physical and Chemical Properties**

<b>Physical State and Appearance</b>	Bright oily liquid.	<b>Viscosity</b>	1.3 - 4.1 cSt @ 40°C (104°F)
<b>Colour</b>	Clear to yellow / brown (may be dyed for taxation purposes).	<b>Pour Point</b>	Variable, -50°C to 0°C (-58°F to -32°F)
<b>Odour</b>	Petroleum oil like.	<b>Softening Point</b>	Not applicable.
<b>Odour Threshold</b>	Not available	<b>Dropping Point</b>	Not applicable.
<b>Boiling Point</b>	150 - 371°C (302-700°F)	<b>Penetration</b>	Not applicable.
<b>Density</b>	0.80 - 0.85 kg/L @ 15°C (59°F)	<b>Oil / Water Dist. Coefficient</b>	Not available
<b>Vapour Density</b>	4.5 (Air = 1)	<b>Ionicity (in water)</b>	Not applicable.
<b>Vapour Pressure</b>	Not available	<b>Dispersion Properties</b>	Not available
<b>Volatility</b>	Semivolatile to volatile.	<b>Solubility</b>	Insoluble in cold water, soluble in non-polar hydrocarbon solvents.

**Section 10. Stability and Reactivity**

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

**Section 11. Toxicological Information**

<b>Routes of Entry</b>	Skin contact, eye contact, inhalation, and ingestion.
<b>Acute Lethality</b>	Acute oral toxicity (LD50): 7500 mg/kg (rat).
<b>Chronic or Other Toxic Effects</b>	
Dermal Route:	This product contains a component (at >= 1%) that can cause skin irritation. Therefore, this product is considered to be a skin irritant. Prolonged or repeated contact may defat and dry skin, and cause dermatitis. (See Other Considerations)
Inhalation Route:	Inhalation of this product may cause respiratory tract irritation. Inhalation of this product may cause Central Nervous System (CNS) Depression, symptoms of which may include; weakness, dizziness, slurred speech, drowsiness, unconsciousness and in cases of severe overexposure; coma and death.
Oral Route:	Ingestion of this product may cause gastro-intestinal irritation. Aspiration of this product may result in severe irritation or burns to the respiratory tract. Ingestion of this product may cause Central Nervous System (CNS) Depression, symptoms of which may include; weakness, dizziness, slurred speech, drowsiness, unconsciousness and in cases of severe overexposure; coma and death.
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:	This product is not known to contain any components at >= 0.1% that have been shown to cause reproductive toxicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a reproductive toxin.
Teratogenicity/Embryotoxicity:	This product is not known to contain any components at >= 0.1% that have been shown to cause teratogenicity and/or embryotoxicity. Therefore, based upon the available data and the known hazards of the components, this product is not expected to be a teratogen/embryotoxin.
Carcinogenicity (ACGIH):	ACGIH A3: animal carcinogen. [Diesel oil] (See Other Considerations)
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	Avoid prolonged or repeated skin contact to diesel fuels which can lead to dermal irritation and may be associated with an increased risk of skin cancer.  Diesel engine exhaust particulate is probably carcinogenic to humans (IARC Group 2A).

### 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	DIESEL FUEL, 3, UN1202, PGIII (CL-TDG)	Special Provisions for Transport	See Transportation of Dangerous Goods Regulations.
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### 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.)	<table><tr><td>Health Hazard</td><td>2*</td></tr><tr><td>Fire Hazard</td><td>2</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	2	Reactivity	0	Personal Protection	H	NFPA (U.S.A.)	<table><tr><td rowspan="2">Health</td><td></td><td>Fire Hazard</td><td rowspan="2">Rating</td><td rowspan="5">0 Insignificant 1 Slight 2 Moderate 3 High 4 Extreme</td></tr><tr><td>Reactivity</td></tr><tr><td colspan="3">Specific hazard</td></tr></table>		Health		Fire Hazard	Rating	0 Insignificant 1 Slight 2 Moderate 3 High 4 Extreme	Reactivity	Specific hazard		
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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

TDG - Transportation Dangerous Goods (Canada)  
TDLo/TCLo - Lowest Published Toxic Dose/Concentration  
Tm - Median Tolerance Limit  
TLV-TWA - Threshold Limit Value-Time Weighted Average  
TSCA - Toxic Substances Control Act  
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Prepared by Product Safety - JDW on 2/6/2004.

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# 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	<b>ANTIFREEZE</b>	Code	W269
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.	Validated on	7/6/2004.
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	Used as an engine antifreeze coolant.		

## Section 2. Composition and Information on Ingredients

			Exposure Limits (ACGIH)		
Name	CAS #	% (W/W)	TLV-TWA(8 h)	STEL	CEILING
Ethylene glycol	107-21-1	≥90	Not established	Not established	100 mg/m <sup>3</sup> (aerosol)
Sodium tetraborate pentahydrate (Diesel Engine Coolant only)	12179-04-3	≤5	1 mg/m <sup>3</sup>	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	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 (775°F)

<b>Fire Hazards in Presence of Various Substances</b>	Low fire hazard. This material must be heated before ignition will occur.	<b>Explosion Hazards in Presence of Various Substances</b>	Do not cut, weld, heat, drill or pressurize empty container.
<b>Products of Combustion</b>	Carbon oxides (CO, CO <sub>2</sub> ), smoke and irritating vapours as products of incomplete combustion.		
<b>Fire Fighting Media and Instructions</b>	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 CO <sub>2</sub> . 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

<b>Material Release or Spill</b>	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

<b>Handling</b>	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 pressurize, 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.
<b>Storage</b>	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

<b>Engineering Controls</b>	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.
<b>Personal Protection - The selection of personal protective equipment varies, depending upon conditions of use.</b>	
<b>Eyes</b>	Chemical splash goggles should be worn when handling this material.
<b>Body</b>	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).
<b>Respiratory</b>	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 release, exposure levels are unknown, or any other circumstances where air-purifying respirators may not provide adequate protection.
<b>Hands</b>	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.
<b>Feet</b>	Wear appropriate footwear to prevent product from coming in contact with feet and skin.



**Section 9. Physical and Chemical Properties**

<b>Physical State and Appearance</b>	Clear viscous liquid.	<b>Viscosity</b>	Not available
<b>Colour</b>	Green.	<b>Pour Point</b>	Not available
<b>Odour</b>	Odourless.	<b>Softening Point</b>	Not applicable.
<b>Odour Threshold</b>	Not available	<b>Dropping Point</b>	Not applicable.
<b>Boiling Point</b>	129 to 197°C (264 to 387°F)	<b>Penetration</b>	Not applicable.
<b>Density</b>	1.115 to 1.145 (Water = 1)	<b>Oil / Water Dist. Coefficient</b>	Not available
<b>Vapour Density</b>	2.1 (Air=1).	<b>Ionicity (in water)</b>	Not available
<b>Vapour Pressure</b>	0.06 mmHg @ 20°C (68°F).	<b>Dispersion Properties</b>	Not available
<b>Volatility</b>	0% (w/w)	<b>Solubility</b>	Soluble in water, methanol and diethyl ether.

**Section 10. Stability and Reactivity**

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

**Section 11. Toxicological Information**

<b>Routes of Entry</b>	Skin contact, eye contact, inhalation and ingestion.		
<b>Acute Lethality</b>	<u>Ethylene glycol (107-21-1):</u> LD50: 4700 mg/kg (oral/rat). LD50: 9530 mg/kg (dermal/rabbit).  <u>Sodium tetraborate pentahydrate (12179-04-3):</u> LD50: 3200-3500 mg/kg (oral/rat) (Boric acid). [Sodium tetraborate pentahydrate]		
<b>Chronic or Other Toxic Effects</b>			
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.
<b>Other Considerations</b>	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.

**Section 12. Ecological Information**

<b>Environmental Fate</b>	Not available	<b>Persistence/ Bioaccumulation Potential</b>	Not available
<b>BOD5 and COD</b>	Not available	<b>Products of Biodegradation</b>	Not available
<b>Additional Remarks</b> No additional remark.			


**Section 13. Disposal Considerations**

<b>Waste Disposal</b>	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**

<b>TDG Classification</b>	Not a hazardous material for transport according to the TDG Regulations. (Canada)	<b>Special Provisions for Transport</b>	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)																			
HMIS (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>1</td><td>Fire Hazard</td></tr><tr><td>2</td><td>0</td></tr><tr><td>Reactivity</td><td></td></tr><tr><td>Specific hazard</td><td></td></tr></table>	1	Fire Hazard	2	0	Reactivity		Specific hazard		Rating	0 Insignificant 1 Slight 2 Moderate 3 High 4 Extreme
Health Hazard	2																				
Fire Hazard	1																				
Reactivity	0																				
Personal Protection	H																				
1	Fire Hazard																				
2	0																				
Reactivity																					
Specific hazard																					

**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

CODS - 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 &amp; Health

NPRI - National Pollutant Release Inventory

NSNR - New Substances Notification Regulations (Canada)

NTP - National Toxicology Program

OSHA - Occupational Safety &amp; 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**Internet: [www.petro-canada.ca/msds](http://www.petro-canada.ca/msds)**Fuels & Solvents:**

Western Canada, Ontario &amp; Central Canada, telephone: 1-800-668-0220; fax: 1-800-837-1228

Quebec &amp; Eastern Canada, telephone: 514-640-8308; fax: 514-640-8385

For Product Safety Information: (905) 804-4752

Prepared by Product Safety - TLM on 7/6/2004.

Data entry by Product Safety - RS.

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

**SECTION 1 – PRODUCT INFORMATION**

**Product Name:** Propane  
**Trade Name:** LPG (Liquified Petroleum Gas), LP-Gas  
**Chemical Formula:** C<sub>3</sub>H<sub>8</sub>

**WHMIS CLASSIFICATION**

Class A - Compressed Gas  
 Class B, Division 1 - Flammable Gas

**Supplier:** Superior Propane Inc.  
 1111 - 49th Avenue N.E.  
 Calgary, AB T2E 8V2

**Business:** (403) 730-7500

**Local Market**

**Emergency Number:** \_\_\_\_\_  
 (Non Medical)

**Application and Use:** Propane is commonly used as a fuel for heating, cooking, automobiles, forklift trucks, crop drying and welding and cutting operations. Propane is used in industry as a refrigerant, solvent and as a chemical feedstock.

**SECTION 2 – HAZARDOUS INGREDIENTS**

COMPONENTS	CAS NO.	% Volume (v/v)	LD50
Propane	74 -98-6	90% - 99%	Not Applicable
Propylene	115 -07-1	0% - 5%	Not Applicable
Ethane	74 -84-0	0% - 5%	Not Applicable
Butane and heavier hydro carbons	106 -97-8	0% - 2.5%	Not Applicable

**Occupational Exposure Limit:**

Based upon animal test data, the acute toxicity of this product is expected to be inhalation: 4 hour LC50 = 280,000 ppm (Rat).

**Note:** Composition is typical for HD-5 Propane per The Canadian General Standard Board CGSB 3.14 National Standard of Canada. Exact composition will vary from shipment to shipment.

**SECTION 3 – CHEMICAL AND PHYSICAL DATA**

**Form:** Liquid and vapour while stored under pressure.

**Boiling Point:** -42°C @ 1 atm.

**Freezing Point:** -188°C

**Evaporation Rate:** Rapid (Gas at normal ambient conditions).

**Vapour Pressure:** 1435 kPa (maximum) @ 37.8°C

**Vapour Density:** 1.52 (Air = 1)

**Coefficient of Water/Oil Distribution:** Not available.

**pH:** Not available.

**Solubility in water:** Slight, 6.1% by volume @ 17.8°C

**Specific Gravity:** 0.51 (water = 1)

**Appearance/Odour:** Colourless liquid and vapour while stored under pressure. Colourless and odourless gas in natural state at any concentration. Commercial propane has an odourant added, ethyl mercaptan, which has an odour similar to boiling cabbage.\*

**Odour Threshold:** 4800 ppm

\* With proper handling, transportation and storage, adding a chemical odourant such as eth-merc has proven to be a very effective warning device, but all odourants have certain limitations. The effectiveness of the odourant may be diminished by a person's sense of smell, by competing odours and by oxidation which may cause a potentially dangerous situation.

**SECTION 4 – FIRE OR EXPLOSION HAZARD**

**Flash Point:** -103.4°C

**Method:** Closed cup.

**Flammable Limits:** Lower 2.4%, Upper 9.5%

**Auto Ignition Temperature:** 432°C

**Products Evolved Due To Heat Or Combustion:** Carbon monoxide can be produced when primary air and secondary air are deficient while combustion is taking place.

**Fire and Explosive Hazards:** Explosive air-vapour mixtures may form if allowed to leak to atmosphere.

**Sensitivity To Impact:** No.

**Sensitivity To Static Discharge:** Yes.

**Fire Extinguishing Precautions:** Use water spray to cool exposed cylinders or tanks. Do not extinguish fire unless the source of the escaping gas that is fueling the fire can be turned off. Fire can be extinguished with carbon dioxide and/or dry chemical (BC). Container metal shells require cooling with water to prevent flame impingement and the weakening of metal. If sufficient water is not available to protect the container shell from weakening, the area will be required to be evacuated. If gas has not ignited, liquid or vapour may be dispersed by water spray or flooding.

**Special Fire Fighting Equipment:** Protective clothing, hose monitors, fog nozzles, self-contained breathing apparatus.

**SECTION 5 – REACTIVITY DATA**

**Stability:** Stable.

**Conditions To Avoid:** Keep separate from oxidizing agents. Gas explodes spontaneously when mixed with chloride dioxide.

**Incompatibility:** Remove sources of ignition and observe distance requirements for storage tanks from combustible material, drains and openings to building.

**Hazardous Decomposition Products:** Deficient primary and secondary air can produce carbon monoxide.

**Hazardous Polymerization:** Will not occur.

## SECTION 6 – TOXICOLOGICAL PROPERTIES OF MATERIAL

### ROUTES OF ENTRY:

**Inhalation:** Simple asphyxiant. No effect at concentrations of 10,000 ppm (peak exposures). Higher concentrations may cause central nervous system disorder and/or damage. Lack of oxygen may cause dizziness, loss of coordination, weakness, fatigue, euphoria, mental confusion, blurred vision, convulsions, breathing failure, coma and death. Breathing high vapour concentrations (saturated vapours) for a few minutes may be fatal. Saturated vapours may be encountered in confined spaces and/or under conditions of poor ventilation. Avoid breathing vapours or mist.

**Skin and Eye Contact:** Exposure to vapourizing liquid may cause frostbite (cold burns) and permanent eye damage.

**Ingestion:** Not considered to be a hazard.

**Acute Exposure:** The acute toxicity of this product is expected to be inhalation: 4 hour LC50=280,000ppm (Rat).

**Chronic Exposure:** There are no reported effects from long term low level exposure.

**Sensitization to Product:** Skin-unknown, Respiratory-unknown.

**Occupational Exposure Limits:** American Conference of Governmental Industrial Hygienists (ACGIH) lists as a simple asphyxiant. ACGIH TLV: 1000 ppm.

**Carcinogenicity, Reproductive Toxicity, Teratogenicity, Mutagenicity:** No effects reported.

## SECTION 7 – PREVENTIVE MEASURES

**Eyes:** Safety glasses, are recommended when transferring product.

**Skin:** Insulated gloves required if contact with liquid or liquid cooled equipment is expected. Wear gloves and long sleeves when transferring product.

**Inhalation:** Where concentration in air would reduce the oxygen level below 18% air or exceed occupational exposure limits in section 6, self-contained breathing apparatus is required.

**Ventilation:** Explosion proof ventilation equipment required in confined spaces.

## SECTION 8 – EMERGENCY AND FIRST AID PROCEDURES

### FIRST AID:

**Eyes:** Should eye contact with liquid occur, flush eyes with lukewarm water for 15 minutes. Obtain immediate medical care.

**Skin:** In case of "Cold Burn" from contact with liquid, immediately place affected area in lukewarm water and keep at this temperature until circulation returns. If fingers or hands are frostbitten, have the victim hold his hand next to his body such as under the armpit. Obtain immediate medical care.

**Ingestion:** None considered necessary.

**Inhalation:** Remove person to fresh air. If breathing is difficult or has stopped, administer artificial respiration. Obtain immediate medical care.

### SPILL OR LEAK:

Eliminate leak if possible.

Eliminate source of ignition.

Ensure cylinder is upright.

Disperse vapours with hose streams using fog nozzles. Monitor low areas as propane is heavier than air and can settle into low areas. Remain upwind of leak. Keep people away. Prevent vapour and/or liquid from entering into sewers, basements or confined areas.

## SECTION 9 – TRANSPORTATION, HANDLING AND STORAGE

- Transport and store cylinders and tanks secured in an upright position in a ventilated space away from ignition sources (so the pressure relief valve is in contact with the vapour space of the cylinder or tank).
- Cylinders that are not in use must have the valves in the closed position and be equipped with a protective cap or guard.
- Do not store with oxidizing agents, oxygen, or chlorine cylinders.

- Empty cylinders and tanks may contain product residue. Do not pressurize, cut, heat or weld empty containers.
- Transport, handle and store according to applicable federal and provincial codes and regulations.

### Transportation of Dangerous Goods (TDG)

- TDG Classification: Flammable Gas 2.1
- TDG Shipping Name: Liquified Petroleum Gas (Propane)
- TDG Special Provisions: 56, 90, 102
- PIN Number: UN1075

## SECTION 10 – PREPARATION

Superior Propane Inc., Regulations & Safety Department. (403) 730-7500 Date prepared: November 2001.  
Supersedes: September 1999.

The information contained herein is believed to be accurate. It is provided independently of any sale of the product. It is not intended to constitute performance information concerning the product. No express warranty, implied warranty of merchantability or fitness for a particular purpose is made with respect to the product information contained herein.