

# MATERIAL SAFETY DATA SHEET



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PAGE 1 OF 4

EMERGENCY PHONE NO. (604) 535-6699

EXTREME SUPER-G BLUE

## WHMIS HAZARD INDEX:

### DEGREE OF HAZARD:

HEALTH 1  
FIRE 2  
REACTIVITY 0  
OTHER: B (GLASSES & GLOVES)

### HAZARD RATING:

0 LEAST  
1 SLIGHT  
2 MODERATE  
3 HIGH  
4 EXTREME

## SECTION 1

## PRODUCT IDENTIFICATION

PRODUCT NAME: EXTREME SUPER-G BLUE  
CHEMICAL IDENTIFICATION: Anionic polyacrylamides in water oil emulsion  
MATERIAL USE: Drilling mud additive  
WHMIS CLASSIFICATION: B3, D2B  
WORK PLACE HAZARD: Combustible liquid; skin & eye irritant

## TRANSPORTATION OF DANGEROUS GOODS (TDGR)

CLASSIFICATION: Not dangerous goods  
PACKAGE GROUP: NA  
CAS NUMBER: NA  
MSDS CODE: NA

## SECTION 2

## HAZARDOUS INGREDIENTS

INGREDIENT:	<u>Mineral spirits</u>	<u>Alkyl Phenol Ethoxylate</u>	<u>Ethoxylated C12-15 Alcohol</u>
PERCENTAGE:	30-60	3-7	0.5-1.5
CAS NUMBER:	64742-47-8	68412-54-4	68131-39-5
LD (50):	>5 g/kg	3 g/kg	>3200 mg/kg
LC (50):	Undetermined	Undetermined	Undetermined

## EXTREME SUPER-G BLUE

## MATERIAL SAFETY DATA SHEET

**SECTION 3****PHYSICAL DATA**

APPEARANCE AND ODOUR:	Blue liquid emulsion, slight odour
DENSITY (SPECIFIC GRAVITY):	NA
BOILING POINT:	NA
MELTING POINT:	NA
SOLUBILITY:	Forms gel
EVAPORATION RATE: (EE=1):	NA
VAPOUR PRESSURE: (MM HG):	NA
VAPOUR DENSITY: (AIR = 1):	NA

**SECTION 4****FIRE AND EXPLOSION**

FLASHPOINT:	65°C (TCC)
FLAMMABLE LIMIT:	Undetermined
AUTO IGNITION TEMP:	Undetermined
EXTINGUISHING MEDIA:	Water spray, foam, dry chemical & CO <sub>2</sub>
SPECIAL FIRE FIGHTING PROCEDURES:	Self-contained respirators required for firefighting personnel
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Water may cause slipperiness. Sensitivity to static discharge

**SECTION 5****REACTIVITY DATA**

STABILITY (THERMAL, LIGHT, ETC.):	Stable
INCOMPATIBILITY (CONDITIONS TO AVOID):	Strong oxidizing agents, strong reducing agents
HAZARDOUS POLYMERIZATION:	Will not occur
HAZARDOUS DECOMPOSITION PRODUCTS:	NO <sub>x</sub> , CO <sub>x</sub>

## EXTREME SUPER-G BLUE

## MATERIAL SAFETY DATA SHEET

SECTION 6HEALTH HAZARDS

## ROUTE OF ENTRY:

(XX) SKIN

(XX) EYE CONTACT

( ) INHALATION

(XX) INGESTION

## SKIN CONTACT:

Irritant. Can cause redness, inflammation and irritation on prolonged contact

## EYE CONTACT:

Severe irritant. Can cause redness, tissue destruction and irritation

## INHALATION:

Unlikely

## INGESTION:

May cause nausea, diarrhea and abdominal cramps

SECTION 7PREVENTATIVE MEASURES

## SKIN PROTECTION:

Chemically resistant gloves

## EYE PROTECTION:

Safety glasses

## VENTILATION:

General mechanical

## RESPIRATORY PROTECTION:

NIOSH approved organic vapour cartridge respirator if exposure is excessive

## LEAK &amp; SPILL PROCEDURE:

Small spills: soak up with absorbent material  
Large spills: dike to contain spill to prevent water pollution. Recover diked material

## WASTE DISPOSAL:

Incinerate/dispose of in accordance with local regulations

## STORAGE REQUIREMENTS:

Store in a cool, well-ventilated area

## EXTREME SUPER-G BLUE

## MATERIAL SAFETY DATA SHEET

SECTION 8FIRST AID MEASURES

SKIN:

Wash exposed area with soap & water. If irritation or abnormalities persist seek medical attention. Remove contaminated clothing and launder prior to re-use

EYE:

Immediately flush eyes with water for 15 mins and seek medical attention

INHALATION:

Remove to fresh air. If irritation continues, seek medical attention

INGESTION:

If conscious & alert, give 1-2 glasses water. Never give anything by mouth to an unconscious person. Seek medical attention; do not leave unconscious person unattended. Do not induce vomiting

SECTION 9PREPARATION DATE

DATE ISSUED:

AUGUST 20, 1996

BY:

PRODUCT SAFETY COMMITTEE

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DATE REVISED:

AUGUST 20, 2004

# MATERIAL SAFETY DATA SHEET



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**EXTREME STOP**

**EMERGENCY PHONE NO. (604) 535-6699**

**PAGE 1 OF 4**

## WHMIS HAZARD INDEX:

### DEGREE OF HAZARD:

HEALTH 0  
FIRE 0  
REACTIVITY 0  
OTHER: 0

### HAZARD RATING:

0 LEAST  
1 SLIGHT  
2 MODERATE  
3 HIGH  
4 EXTREME

## SECTION 1

### PRODUCT IDENTIFICATION

PRODUCT NAME:	EXTREME STOP
CHEMICAL IDENTIFICATION:	Acrylamide Copolymer
MATERIAL USE:	Lost Circulation Material
WHMIS CLASSIFICATION:	Non Hazardous
WORK PLACE HAZARD:	Not Applicable

### TRANSPORTATION OF DANGEROUS GOODS (TDGR)

CLASSIFICATION:	Not Dangerous Goods
PACKAGE GROUP:	N/A
CAS NUMBER:	N/A
MSDS CODE:	N/A

## SECTION 2

### HAZARDOUS INGREDIENTS

INGREDIENT:	None Considered Hazardous
PERCENTAGE:	N/A
CAS NUMBER:	N/A
LD (50):	
LC (50):	

EXTREME STOP

**MATERIAL SAFETY DATA SHEET****SECTION 3****PHYSICAL DATA**

APPEARANCE AND ODOUR:	White Freeflowing Granules, very mild odour.
DENSITY (SPECIFIC GRAVITY):	1.05
BOILING POINT:	N/A
MELTING POINT:	N/A
SOLUBILITY:	>60%
EVAPORATION RATE: (EE=1):	N/A
VAPOUR PRESSURE: (MM HG):	N/A
VAPOUR DENSITY: (AIR = 1):	N/A

**SECTION 4****FIRE AND EXPLOSION**

FLASHPOINT:	No Data
FLAMMABLE LIMIT:	Not Determined
AUTO IGNITION TEMP:	No Data
EXTINGUISHING MEDIA:	Dry chemical, foam, water fog, CO <sub>2</sub>
SPECIAL FIRE FIGHTING PROCEDURES:	None
UNUSUAL FIRE AND EXPLOSION HAZARDS:	None

**SECTION 5****REACTIVITY DATA**

STABILITY (THERMAL, LIGHT, ETC.):	Stable
INCOMPATIBILITY (CONDITIONS TO AVOID):	Oxidizing Agents
HAZARDOUS POLYMERIZATION:	Will not occur
HAZARDOUS DECOMPOSITION PRODUCTS:	Oxides of Carbon as products of combustion.

EXTREME STOP

**MATERIAL SAFETY DATA SHEET****SECTION 6****HEALTH HAZARDS**

## ROUTE OF ENTRY:

☐ SKIN☐ EYE CONTACT☐ INHALATION☐ INGESTION

SKIN CONTACT:

N/A

EYE CONTACT:

N/A

INHALATION:

N/A

INGESTION:

N/A

**SECTION 7****PREVENTATIVE MEASURES**

SKIN PROTECTION:

No special requirements.

EYE PROTECTION:

Goggles, may be nuisance dust.

VENTILATION:

No special requirements.

RESPIRATORY PROTECTION:

If nuisance dust use dust mask.

LEAK &amp; SPILL PROCEDURE:

Collect in container. Dispose with solid waste. Non hazardous.

WASTE DISPOSAL:

Dispose of in compliance with local and government regulations.

STORAGE REQUIREMENTS:

Store in a cool, dry area, away from oxidizing agents. Keep containers closed when not in use.

EXTREME STOP

**MATERIAL SAFETY DATA SHEET****SECTION 8****FIRST AID MEASURES**

SKIN:	N/A
EYE:	N/A
INHALATION:	N/A
INGESTION:	N/A




**SECTION 9****PREPARATION DATE**

DATE ISSUED:	AUGUST 20, 1996
BY:	PRODUCT SAFETY COMMITTEE

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DATE REVISED:	AUGUST 20, 2004
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WHMIS (Pictograms)	WHMIS (Classification)	Protective Clothing	TDG (pictograms)
	Not controlled		

### Section 1. Chemical Product and Company Identification

Product Name	<b>EXTREME ENVIRO COTE</b>		
Synonym	Not available		
Manufacturer	Extreme Products & Drilling Supplies Inc. 15840 Mountainview Drive Surrey BC CANADA V3S 0C6		In case of Emergency Extreme Products: 604-535-6699  Poison Control Centre: Consult local telephone directory for emergency number(s).
Material Uses	Grease products are calcium sulfonate thickened greases designed for high temperature multipurpose automotive and industrial applications.		

### Section 2. Composition and Information on Ingredients

			Exposure Limits (ACGIH)		
Name	CAS#	% (W/W)	TLV-TWA (8h)	STEL	CEILING
1) Proprietary	Mixture	100	5 mg/m <sup>3</sup> (oil mist)	10 mg/m <sup>3</sup> (oil mist)	Not established

### Section 3. Hazards Identification

Potential Health Effects	May cause irritation of the eyes and skin. Relatively non-toxic via ingestion. This product has a low vapour pressure and is not expected to present an inhalation exposure at ambient conditions. Upon heating to high temperatures, or mechanical actions which may produce vapours or mists, inhalation of product may cause irritation of the breathing passages. For more information, refer to Section 11.
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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. High pressure grease gun is capable of injecting grease through the skin. Grease gun injuries require immediate physician assessment. 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	Not available.
Flash Points	Mineral Oil Blend: OPEN CUP: 193°C (379.4°F) (Cleveland)	Auto-Ignition Temperature	Mineral Oil Blend: Fire Point: >210°C (410°F)
Fire Hazards in Presence of Various Substances	Not available	Explosion Hazards in Presence of Various Substances	Not available
Products of Combustion	Carbon oxides (CO, CO <sub>2</sub> ), sulphur oxides (SO <sub>x</sub> ), calcium oxides (CaO <sub>x</sub> ), smoke and irritating vapours as products of incomplete combustion.		
Fire Fighting Media and Instructions	NAERG88, 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 discoloration of tank due to fire. Cool containing vessels with water spray in order to prevent pressure build-up, autolignition 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>	NAERG96, GUIDE 171, Substances (low to moderate hazard). ELIMINATE ALL IGNITION SOURCES. Avoid contact. Stop leak if without risk. Contain spill. Absorb with inert absorbents; dry clay, or diatomaceous earth. Avoid inhaling dust of diatomaceous earth for it may contain silica in very fine particle size, making this a potential respiratory hazard. Place used absorbent in closed metal containers for later disposal or burn absorbent in a suitable combustion chamber. DO NOT FLUSH TO SEWERS, STREAMS OR OTHER BODIES OF WATER. Check with applicable jurisdiction for specific disposal requirements of spilled material and empty containers. Notify the appropriate authorities immediately.
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**Section 7. Handling and Storage**

<b>Handling</b>	Keep away from sources of ignition. DO NOT reuse empty containers without commercial cleaning or reconditioning. Practice good personal hygiene. Wash hands after handling and before eating. Launder work clothes frequently. Discard saturated leather goods.
<b>Storage</b>	Store in tightly closed containers in cool, dry, isolated, well-ventilated area, and away from incompatibles.

**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>	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.
<b>Exposure Limits</b>	Consult local, state, provincial or territory authorities for acceptable exposure limits. This product is not expected to form a mist based on its properties and expected use.

**Section 9. Physical and Chemical Properties**

<b>Physical State and Appearance</b>	Semi-solid	<b>Viscosity</b>	Mineral Oil Blend: 2-73 cSt @ 40°C, 9.4 cSt @ 100°C, VI=92
<b>Colour</b>	Cream-white.	<b>Pour Point</b>	Mineral Oil Blend: <-8°C
<b>Odour</b>	Mild petroleum oil like.	<b>Softening Point</b>	Not available
<b>Odour Threshold</b>	Not available.	<b>Dropping Point</b>	300°C
<b>Boiling Point</b>	Not available	<b>Penetration</b>	270 (60 strokes)
<b>Specific Gravity</b>	Mineral Oil Blend: 0.98 kg/L @ 15°C (59°F).	<b>Oil / Water Dist. Coeff.</b>	Not available.
<b>Vapor Density</b>	Not available	<b>Ionicity (in water)</b>	Not available.
<b>Vapor Pressure</b>	Negligible at ambient temperature and pressure.	<b>Dispersion Properties</b>	Not available.
<b>Volatility</b>	Not available.	<b>Solubility</b>	Insoluble in water. Partially soluble in organic solvents.

**Section 10. Stability and Reactivity**

<b>Corrosivity</b>	Not corrosive to copper or steel.	<b>Hazardous Polymerization</b>	Will not occur under normal working conditions.
<b>Stability</b>	The product is stable under normal handling and storage conditions.	<b>Decomposition Products</b>	COx, SOx, and CaOx, smoke and irritating vapours as products of incomplete combustion.
<b>Incompatible Substances / Conditions to Avoid</b>	Reactive with oxidizing agents.		

**HMS (U.S.A.)**

Health Hazard	1
Fire Hazard	1
Reactivity	0
Personal Protection	B

**NFPA (U.S.A.)**

Health	1	Fire Hazard	1
		Reactivity	0
		Specific hazard	

**Section 11. Toxicological Information**

<b>Routes of Entry</b>	Skin contact, eyes contact, inhalation and ingestion.
<b>Acute Lethality</b>	Not available.
<b>Chronic or Other Toxic Effects</b>	
Dermal Route:	May irritate skin.
Inhalation Route:	Negligible breathing hazard at normal temperatures (up to 38°C) or recommended blending temperatures. Elevated temperatures or mechanical action may form vapours, mists or fumes. Inhalation of oil mists or vapours from hot oil may cause irritation of the upper respiratory tract.
Oral Route:	Low toxicity; has laxative effect.
Eye Irritation/Inflammation:	May irritate the eyes.
Immunotoxicity:	Not available.
Skin Sensitization:	This product is not expected to be a skin sensitizer, based on the available data and the known hazards of the components.
Respiratory Tract Sensitization:	This product is not expected to be a respiratory tract sensitizer, based on the available data and the known hazards of the components.
Mutagenic:	This product is not expected to be a mutagen, based on the available data and the known hazards of the components.
Reproductive Toxicity:	This product is not expected to be a reproductive hazard, based on the available data and the known hazards of the components.
Teratogenicity/Embryotoxicity:	This product is not expected to be a teratogen or an embryotoxin, based on the available data and the known hazards of the components.
Carcinogenicity (ACGIH):	This product is not known to contain any chemicals at reportable quantities that are listed as A1 or A2 carcinogens by ACGIH.
Carcinogenicity (IARC):	This product is not known to contain any chemicals at reportable quantities that are listed as group 1, 2A or 2B carcinogens by IARC.
Carcinogenicity (NTP):	This product is not known to contain any chemicals at reportable quantities that are listed as carcinogens by NTP.
Carcinogenicity (IRIS):	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>	No additional remark.

**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>	Preferred waste management priorities are: (1) recycle or reprocess; (2) incineration with energy recovery; (3) disposal at licensed waste disposal facility. Ensure that disposal or reprocessing is in compliance with government requirements and local disposal regulations. Consult your local or regional authorities.
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**Section 14. Transport Information**

<b>TDG Classification</b>	Not controlled under TDG (Canada).	<b>Special Provisions for Transport</b>	Not applicable.
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**Section 15. Regulatory Information**

<b>Other Regulations</b>	<p>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).</p> <p>All components of this formulation are listed on the US EPA-TSCA Inventory.</p> <p>All components of this formulation are listed on EINECS or exempt.</p> <p>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.</p> <p>Please contact Product Safety for more information.</p>
<b>DSD/DPD (Europe)</b>	Not classified under the Dangerous Substances or Dangerous Preparations Directives.

# MATERIAL SAFETY DATA SHEET

## SECTION I: IDENTIFICATION OF PRODUCT

COMPANY: **Diversity Technologies Corp.** DATE: Apr. 5, 2004  
**8750 – 53<sup>rd</sup> Ave.** PHONE: 780-468-4064  
**Edmonton, AB T6E 5G2** FAX: 780-469-1899

PRODUCT NAME: **CALCIUM CHLORIDE FLAKE (77%)**  
**Calcium chloride dihydrate**

PRODUCT USE: Oil well drilling fluid & cement additive.  
CHEMICAL FAMILY: Alkaline earth halide CAS#: 10035-04-8

## WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

WHMIS CLASSIFICATION: D2B  
WORKPLACE HAZARD: Skin & eye irritant

## TRANSPORTATION OF DANGEROUS GOODS (TDG)

PROPER SHIPPING NAME: Not regulated under TDG.  
TDG CLASSIFICATION: Not applicable.  
UN NUMBER (PIN): Not applicable.  
PACKING GROUP: Not applicable.

## SECTION II: HAZARDOUS INGREDIENTS

<u>INGREDIENT</u>	<u>% (w/w)</u>	<u>CAS NUMBER</u>	<u>LD<sub>50</sub> Oral-Rat</u>	<u>LC<sub>50</sub> Inhal-Rat</u>	<u>ACGIH-TLV</u>
Calcium chloride	77	10043-52-4	1000mg/kg	Not available	Not established

## SECTION III: HEALTH HAZARDS

ROUTE OF ENTRY: [XX] EYE CONTACT [XX] SKIN [ ] INHALATION [ ] INGESTION  
EYE CONTACT: May cause irritation or burns.  
SKIN CONTACT: May cause skin irritation. Prolonged contact when moisture is present may result in superficial burns. Contact with abraded skin or cuts can cause severe necrosis.  
INGESTION: Low in toxicity. May irritate gastrointestinal tract and cause nausea and vomiting.

INHALATION:	Dust or mist (from solutions) may cause temporary irritation of the nose and throat. Severe exposures may cause nasal discharge and coughing. Severe exposures are unlikely to cause serious or irreversible harmful effects to the lung, or produce toxic effects elsewhere in the body.
CARCINOGENICITY:	Not considered a carcinogen.
TERATOGENICITY:	No evidence of teratogenicity.
REPRODUCTIVE TOXICITY:	No evidence of reproductive toxicity.
MUTAGENICITY:	Not considered a mutagen.
SYNERGISTIC PRODUCTS:	No known synergistic materials.

#### SECTION IV: FIRST AID MEASURES

SKIN CONTACT:	Immediately wash with lots of soap and water. Remove and launder contaminated clothing before reuse. If irritation persists or develops obtain medical attention.
EYE CONTACT:	Immediately flush eyes with gently flowing water for at least 15 minutes; lifting the eyelids ensure thorough flushing. Obtain medical attention.
INGESTION:	Rinse mouth with water and give 2 to 4 glasses of water to dilute material in stomach. Induce vomiting under medical supervision. Obtain medical attention. Never give anything by mouth unless victim is fully conscious.
INHALATION:	Move to fresh air. Give oxygen or artificial respiration if required. If breathing difficulties, or distress, continue obtain medical attention

#### SECTION V: PHYSICAL DATA

APPEARANCE AND ODOUR:	Small white flakes; odourless
SPECIFIC GRAVITY:	1.85 @ 25°C
BOILING POINT (°C):	Not available
MELTING POINT (°C):	176
SOLUBILITY IN WATER:	97.7 g/100mL @ 0°C      pH: 7 to 10
PERCENT VOLATILE BY VOLUME:	Not applicable
EVAPORATION RATE:	Not applicable
VAPOUR PRESSURE (mmHg):	Not applicable
VAPOUR DENSITY (air = 1):	Not applicable
BULK DENSITY:	Not available

**SECTION VI: FIRE AND EXPLOSION HAZARD DATA**

FLASH POINT:	Not applicable
FLAMMABLE LIMITS:	Not applicable
EXTINGUISHING MEDIA:	Use extinguishing media appropriate for packaging and surrounding fire.
SPECIAL FIRE FIGHTING PROCEDURES:	Self-contained breathing apparatus required for fire fighting personnel.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Product will not burn. Avoid use of water for fire fighting, as product will produce considerable heat when dissolving in water.

**SECTION VII: REACTIVITY DATA**

STABILITY:	STABLE <input checked="" type="checkbox"/> UNSTABLE <input type="checkbox"/>
INCOMPATIBILITY (CONDITIONS TO AVOID):	Reacts violently with bromine trifluoride, or a mixture of boron trioxide and calcium oxide. Sulfuric acid yields hydrogen chloride (HCl), which is corrosive, irritating, and reactive. Water reactive materials, such as sodium, cause an exothermic reaction. Methyl vinyl ether starts runaway polymerization reaction. Zinc; yields hydrogen gas with solutions, which may explode under these conditions.
CONDITIONS OF REACTIVITY:	Contact with incompatibles.
HAZARDOUS DECOMPOSITION PRODUCTS:	Fumes of chlorides (Cl <sup>-</sup> ) are given off at temperatures above 1600°C.
HAZARDOUS POLYMERIZATION:	WILL NOT OCCUR <input checked="" type="checkbox"/> MAY OCCUR <input type="checkbox"/>

**SECTION VIII: PREVENTATIVE MEASURES****SPECIAL PROTECTION INFORMATION**

RESPIRATORY PROTECTION:	NIOSH/MESA approved dust mask or respirator with dust cartridges recommended.
VENTILATION:	Use local exhaust ventilation, process enclosure or other engineering controls as required to keep airborne concentrations of dust below TLV.
PROTECTIVE GLOVES:	Rubber or plastic gloves suggested.
EYE PROTECTION:	Safety glasses with side-shields at minimum. Do not wear contact lenses.
OTHER PROTECTIVE EQUIPMENT (Specify):	Ensure eyewash station and emergency shower are available.

### **PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING**

Avoid contact with skin, eyes and clothing. Avoid breathing dust. Wash thoroughly after handling. Store in a cool, dry place away from incompatibles. Prolonged storage may cause product to cake and become wet from atmospheric moisture. Empty packages contain residual hazardous material and should be handled as if full.

### **STEPS TO BE TAKEN IN CASE THE MATERIAL IS SPILLED OR RELEASED**

Use appropriate safety equipment. Most spills can be cleaned up using brooms and shovels. Collect uncontaminated material for repackaging. Collect contaminated material in approved containers for disposal. Flush spill area with copious quantities of water. Prevent water from entering sewers and watercourses.

### **WASTE DISPOSAL METHOD**

Dispose in accordance with federal, provincial and local regulations. It is the responsibility of the end-user to determine if material meets the criteria of hazardous waste at the time of disposal.

### **SECTION IX: PREPARATION**

THE INFORMATION CONTAINED HEREIN IS GIVEN IN GOOD FAITH,  
BUT NO WARRANTY, EXPRESSED OR IMPLIED, IS MADE.

DATE ISSUED:	April 5, 2004	BY:	Product safety committee
SUPERSEDES:	December 11, 2001	PHONE:	780-440-4923

**Shell Canada Limited**  
**Material Safety Data Sheet**

Effective Date: 2005-08-15

Supersedes: 2002-08-14

Class B2 Flammable  
LiquidClass D2B Other Toxic  
Effects - Skin Irritant**1. PRODUCT AND COMPANY IDENTIFICATION**

PRODUCT: **SHELL AVGAS 100 LL**  
SYNONYMS: AVIATION GASOLINE  
PRODUCT USE: Fuel  
MSDS Number: 101-200

**MANUFACTURER**

**Shell Canada Limited**  
P.O. Box 100, Station M  
400-4th Ave. S.W.  
Calgary, AB Canada  
T2P 2H5

**TELEPHONE NUMBERS****Shell Emergency Number**

1-800-661-7378

**CANUTEC 24 HOUR EMERGENCY NUMBER**

613-996-6666

For general information:

1-800-661-1600

For MSDS information:

403-691-3982

(From 7:30 to 4:30 Mountain Time)

403-691-2220

This MSDS was prepared by the Toxicology and Product Stewardship Section of Shell Canada Limited.

\*An asterisk in the product name designates a trade-mark(s) of Shell Canada Limited, used under license by Shell Canada Products.

**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Component Name	CAS Number	% Range	WHMIS Controlled
Naphtha (Petroleum), Light Alkylate	64741-66-8	70 - 90	Yes
Toluene	108-88-3	10 - 30	Yes

See Section 8 for Occupational Exposure Guidelines.

**3. HAZARDS IDENTIFICATION**

**Physical Description:** Liquid Blue Colour Clear Typical Gasoline Odour

**Routes of Exposure:** Exposure will most likely occur through skin contact or inhalation.

**Hazards:**



Vapour concentrations above the recommended exposure level are irritating to the eyes and respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.

Flammable Liquid.

Irritating to skin.

Ingestion may result in vomiting. Avoid aspiration of vomitus into lungs as small quantities may result in aspiration pneumonitis.

May be absorbed by skin contact.

**Handling:**

Eliminate all ignition sources.

Wear suitable gloves and eye protection.

Bond and ground transfer containers and equipment to avoid static accumulation.

Avoid prolonged exposure to vapours.

Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

For further information on health effects, see Section 11.

#### 4. FIRST AID

- Eyes:** Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.
- Skin:** Wash contaminated skin with mild soap and water for 15 minutes. If irritation occurs and persists, obtain medical attention.
- Ingestion:** Do not induce vomiting. Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously keep head below hips to prevent aspiration of liquid into the lungs. Do not give anything by mouth to an unconscious person. Obtain medical attention immediately.
- Inhalation:** Remove victim from further exposure and restore breathing, if required. Obtain medical attention.
- Notes to Physician:** The main hazard following accidental ingestion is aspiration of the liquid into the lungs producing chemical pneumonitis. If more than 2.0 mL/kg has been ingested, vomiting should be induced with supervision. If symptoms such as loss of gag reflex, convulsions or unconsciousness occur before vomiting, gastric lavage with a cuffed endotracheal tube should be considered.

#### 5. FIRE FIGHTING MEASURES

- Extinguishing Media:** Dry Chemical  
Carbon Dioxide  
Foam  
Water Fog
- Firefighting Instructions:** Extremely flammable. Vapour forms a flammable/explosive mixture with air between upper and lower flammable limits. Vapours may travel along ground and flashback along vapour trail may occur. Product will float and can be reignited on surface of water. Do not use water except as a fog. Avoid breathing vapours. Avoid inhalation of smoke. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus.
- Hazardous Combustion Products:** Carbon dioxide, carbon monoxide and unidentified organic compounds may be formed upon combustion.

## 6. ACCIDENTAL RELEASE MEASURES

Issue warning "Flammable". Eliminate all ignition sources. Isolate hazard area and restrict access. Handling equipment must be grounded. Try to work upwind of spill. Avoid direct contact with material. Wear appropriate breathing apparatus (if applicable) and protective clothing. Stop leak only if safe to do so. Dike and contain land spills; contain water spills by booming. Use water fog to knock down vapours; contain runoff. Absorb residue or small spills with absorbent material and remove to non-leaking containers for disposal. Recommended materials: Clay or Sand Flush area with water to remove trace residue. Dispose of recovered material as noted under Disposal Considerations. Notify appropriate environmental agency(ies).

## 7. HANDLING AND STORAGE

- Handling:** Extremely flammable. Avoid breathing vapours and prolonged or repeated contact with skin. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. Provide adequate ventilation. Vapours may accumulate and travel to distant ignition sources and flashback. Do not cut, drill, grind, weld or perform similar operations on or near containers. Empty containers are hazardous, may contain flammable/explosive dusts, residues or vapours. Wash with soap and water prior to eating, drinking, smoking, applying cosmetics or using toilet facilities. Launder contaminated clothing prior to reuse. Use good personal hygiene.
- Storage:** Store in a cool, dry, well ventilated area, away from heat and ignition sources. Protect against physical damage to containers.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

THE FOLLOWING INFORMATION, WHILE APPROPRIATE FOR THIS PRODUCT, IS GENERAL IN NATURE. THE SELECTION OF PERSONAL PROTECTIVE EQUIPMENT WILL VARY DEPENDING ON THE CONDITIONS OF USE.

### OCCUPATIONAL EXPOSURE LIMITS (Current ACGIH TLV/TWA unless otherwise noted):

Gasoline: 300 ppm (STEL: 500 ppm)

Toluene (skin): 50 ppm

Skin Notation: Absorption through skin, eyes and mucous membranes may contribute significantly to the total exposure.

- Mechanical Ventilation:** Use explosion-proof ventilation as required to control vapour concentrations. Concentrations in air should be maintained below lower explosive limit at all times or below the recommended threshold limit value if unprotected personnel are involved. Make up air should always be supplied to balance air exhausted (either generally or locally). For personnel entry into confined spaces (i.e. bulk storage tanks) a proper confined space entry procedure must be followed including ventilation and testing of tank atmosphere.

### PERSONAL PROTECTIVE EQUIPMENT:

- Eye Protection:** Chemical safety goggles and/or full face shield to protect eyes and face, if product is handled such that it could be splashed into eyes. Provide an eyewash station in the area.

- Skin Protection:** Avoid contact with skin. Use protective clothing and gloves manufactured from nitrile. Safety showers should be available for emergency use.
- Respiratory Protection:** Avoid breathing vapour or mists. If exposure has the potential to exceed occupational exposure limits, use an appropriate NIOSH-approved respirator. For high airborne concentrations, use a NIOSH-approved supplied-air respirator, either self-contained or airline breathing apparatus, operated in positive pressure mode.

## 9. PHYSICAL DATA

<b>Physical State:</b>	Liquid
<b>Appearance:</b>	Blue Colour Clear
<b>Odour:</b>	Typical Gasoline Odour
<b>Odour Threshold:</b>	Not available
<b>Freezing/Pour Point:</b>	Freeze Point < -58 °C
<b>Boiling Point:</b>	70 - 170 °C
<b>Density:</b>	Not available
<b>Vapour Density (Air = 1):</b>	Not available
<b>Vapour Pressure (absolute):</b>	> 285 mm Hg @ 38 °C
<b>pH:</b>	Not applicable
<b>Flash Point:</b>	Tag Closed Cup < 1 °C
<b>Lower Explosion Limit:</b>	1.4 % (vol.)
<b>Upper Explosion Limit:</b>	7.6 % (vol.)
<b>Autoignition Temperature:</b>	Not available
<b>Viscosity:</b>	Not available
<b>Evaporation Rate (n-BuAc = 1):</b>	Not available
<b>Partition Coefficient (log K<sub>ow</sub>):</b>	Not available
<b>Water Solubility:</b>	Insoluble
<b>Other Solvents:</b>	Hydrocarbon Solvents

## 10. STABILITY AND REACTIVITY

<b>Chemically Stable:</b>	Yes
<b>Hazardous Polymerization:</b>	No
<b>Sensitive to Mechanical Impact:</b>	No
<b>Sensitive to Static Discharge:</b>	Yes
<b>Incompatible Materials:</b>	Avoid strong oxidizing agents.
<b>Conditions of Reactivity:</b>	Avoid excessive heat, open flames and all ignition sources.

## 11. TOXICOLOGICAL INFORMATION

<b>Ingredient (or Product if not specified)</b>	<b>Toxicological Data</b>
Naphtha (Petroleum), Light Alkylate	LD50 Oral Rat > 8000 mg/kg LD50 Dermal Rat > 4000 mg/kg LC50 Inhalation Rat > 11000 mg/m3 for 4hours
Toluene	LD50 Dermal Rabbit = 14000 mg/kg LC50 Inhalation Rat = 8000 ppm for 4 hours LD50 Oral Rat = 5000 mg/kg

- Routes of Exposure:** Exposure will most likely occur through skin contact or inhalation.
- Formulation:** This product contains n-hexane.

<b>Irritancy:</b>	This product is expected to be irritating to skin but is not predicted to be a skin sensitizer.
<b>Acute Toxicity:</b>	Vapour concentrations above the recommended exposure level are irritating to the eyes and respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.
<b>Chronic Effects:</b>	Prolonged and repeated contact with skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis. Prolonged or repeated exposure to high vapour concentration or ingestion can cause headache, nausea, dizziness, and central nervous system depression, and in rare cases may sensitize heart muscles causing heart arrhythmia. Peripheral neurotoxicity has been reported in connection with over exposure to n-hexane. This product contains low levels of lead. Chronic, low grade exposure to lead compounds could lead to insomnia, anorexia, nausea and vomiting, diarrhea, anemia, sensory loss and muscular weakness.
<b>Pre-existing Conditions:</b>	Pre-existing eye, skin and respiratory disorders may be aggravated by exposure to this product.

## 12. ECOLOGICAL INFORMATION

Do not allow product or runoff from fire control to enter storm or sanitary sewers, lakes, rivers, streams, or public waterways. Block off drains and ditches. Provincial regulations require and federal regulations may require that environmental and/or other agencies be notified of a spill incident. Spill area must be cleaned and restored to original condition or to the satisfaction of authorities.

**Biodegradability:** Rapid volatilization.

**Bioaccumulation:** Not available.

**Partition Coefficient (log  $K_{ow}$ ):** Not available

### Aquatic Toxicity

Product is expected to be toxic to aquatic organisms.

<b>Ingredient:</b>	<b>Toxicological Data</b>
<b>Naphtha</b>	EL50 - growth rate (WAF method) Algae (72hr) 1 - 10 mg/L.
<b>(Petroleum), Light</b>	EL50 (WAF method) Daphnia Magna (48hr) 1 - 10 mg/L.
<b>Alkylate</b>	LL50 (WAF method) Rainbow Trout (96hr) 1 - 10 mg/L.
<b>Toluene</b>	EL50 - growth rate Algae (72hr) 10 - 100 mg/L.
	EL50 Daphnia Magna (48hr) 10 - 100 mg/L.
	LL50 Rainbow Trout (96hr) 10 - 100 mg/L.

## 13. DISPOSAL CONSIDERATIONS

Waste management priorities (depending on volumes and concentration of waste) are: 1. recycle (reprocess), 2. energy recovery (cement kilns, thermal power generation), 3. incineration, 4. disposal at a licenced waste disposal facility. Do not attempt to combust waste on-site. Incinerate at a licenced waste disposal site with approval of environmental authority.

## 14. TRANSPORTATION INFORMATION

**Canadian Road and Rail Shipping Classification:**

UN Number	UN1203
Proper Shipping Name	GASOLINE
Hazard Class	Class 3 Flammable Liquids
Packing Group	PG II
Additional Information	Marine Pollutant
Shipping Description	GASOLINE Class 3 UN1203 PG II Marine Pollutant

**15. REGULATORY INFORMATION**

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

<b>WHMIS Class:</b>	Class B2 Flammable Liquid Class D2B Other Toxic Effects - Skin Irritant
<b>DSL/NDL Status:</b>	This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act.
<b>Other Regulatory Status:</b>	No Canadian federal standards.

**16. ADDITIONAL INFORMATION****LABEL STATEMENTS**

<b>Hazard Statement :</b>	Flammable Liquid. Irritating to skin.
<b>Handling Statement:</b>	Eliminate all ignition sources. Wear suitable gloves and eye protection. Bond and ground transfer containers and equipment to avoid static accumulation. Avoid prolonged exposure to vapours. Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.
<b>First Aid Statement :</b>	Wash contaminated skin with soap and water. Flush eyes with water. If overcome by vapours remove to fresh air. Do not induce vomiting. Obtain medical attention.

**Revisions:**

This MSDS has been reviewed and updated.

Changes have been made to:

Section 3

Section 5

Section 6

Section 7

Section 8

Section 9

Section 12

Section 14

**Shell Canada Limited**  
**Material Safety Data Sheet**Effective Date: 2007-05-25  
Supersedes: 2005-07-26Class B2 Flammable  
LiquidClass D2A  
Carcinogenicity**1. PRODUCT AND COMPANY IDENTIFICATION**

PRODUCT: **SHELL BRONZE GASOLINE**  
SYNONYMS: Automotive Fuel  
Petrol  
PRODUCT USE: Fuel  
MSDS Number: 211-100

**SUPPLIER**

**Shell Canada Limited (SCL)**  
P.O. Box 100, Station M  
400-4th Ave. S.W.  
Calgary, AB Canada  
T2P 2H5

**TELEPHONE NUMBERS****Shell Emergency Number****CANUTEC 24 HOUR EMERGENCY NUMBER**

1-800-661-7378

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For general information:

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This MSDS was prepared by the Toxicology and Product Stewardship Section of Shell Canada Limited.

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**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Component Name	CAS Number	% Range	WHMIS Controlled
Gasoline	86290-81-5	> 90	Yes
Benzene	71-43-2	< 1.5	Yes

See Section 8 for Occupational Exposure Guidelines.

**3. HAZARDS IDENTIFICATION**

**Physical Description:** Volatile Liquid Colourless Typical Gasoline Odour

**Routes of Exposure:** Exposure will most likely occur through skin contact or inhalation.

**Hazards:**

Vapour concentrations above the recommended exposure level are irritating to the eyes and respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.

Flammable Liquid.

Contains Benzene.

May cause cancer.

Ingestion may result in vomiting. Avoid aspiration of vomitus into lungs as small quantities may result in aspiration pneumonitis.

May be absorbed by skin contact.

In rare cases may sensitize heart muscle causing heart arrhythmia.

**Handling:**

Eliminate all ignition sources.

Wear suitable gloves and eye protection.

Bond and ground transfer containers and equipment to avoid static accumulation.

Avoid prolonged exposure to vapours.

Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

For further information on health effects, see Section 11.

**4. FIRST AID**

- Eyes:** Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.
- Skin:** Wash contaminated skin with mild soap and water for at least 15 minutes. If irritation occurs and persists, obtain medical attention.
- Ingestion:** DO NOT INDUCE VOMITING! OBTAIN MEDICAL ATTENTION IMMEDIATELY. Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Do not give anything by mouth to an unconscious person.
- Inhalation:** Remove victim from further exposure and restore breathing, if required. Obtain medical attention.
- Notes to Physician:** The main hazard following accidental ingestion is aspiration of the liquid into the lungs producing chemical pneumonitis. If more than 2.0 mL/kg has been ingested, vomiting should be induced with supervision. If symptoms such as loss of gag reflex, convulsions or unconsciousness occur before vomiting, gastric lavage with a cuffed endotracheal tube should be considered.

**5. FIRE FIGHTING MEASURES**

- Extinguishing Media:** Dry Chemical  
Carbon Dioxide  
Foam  
Water Fog
- Firefighting Instructions:** Flammable. Clear area of unprotected personnel. Do not use a direct stream of water as it may spread fire. Product will float and can be reignited on surface of water. Vapour forms a flammable/explosive mixture with air between upper and lower flammable limits. Avoid breathing vapours. Avoid inhalation of smoke. Vapours may travel along ground and flashback along vapour trail may occur. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus. Delayed lung damage can be experienced after exposure to combustion products, sometimes hours after the exposure.



**Hazardous Combustion Products:** Carbon dioxide, carbon monoxide and unidentified organic compounds may be formed upon combustion.

## 6. ACCIDENTAL RELEASE MEASURES

Issue warning "Flammable". Eliminate all ignition sources. Isolate hazard area and restrict access. Handling equipment must be grounded. Work upwind of spill if it is safe to do so. Avoid direct contact with material. Wear appropriate breathing apparatus (if applicable) and protective clothing. Stop leak only if safe to do so. Dike and contain land spills; contain spills to water by booming. Use water fog to knock down vapours; contain runoff. Absorb residue or small spills with absorbent material and remove to non-leaking containers for disposal. Notify appropriate environmental agency(ies). After area has been cleaned up to the satisfaction of regulatory authorities, flush area with water to remove trace residue. Dispose of recovered material as noted under Disposal Considerations.

## 7. HANDLING AND STORAGE

**Handling:** Flammable. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. Avoid breathing vapours and prolonged or repeated contact with skin. Vapours may accumulate and travel to distant ignition sources and flashback. Empty containers are hazardous, may contain flammable/explosive dusts, residues or vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers. Provide adequate ventilation. Launder contaminated clothing prior to reuse. Wash with soap and water prior to eating, drinking, smoking, applying cosmetics or using toilet facilities.

**Storage:** Store in a cool, dry, well ventilated area, away from heat and ignition sources. Use explosion-proof ventilation to prevent vapour accumulation.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

THE FOLLOWING INFORMATION, WHILE APPROPRIATE FOR THIS PRODUCT, IS GENERAL IN NATURE. THE SELECTION OF PERSONAL PROTECTIVE EQUIPMENT WILL VARY DEPENDING ON THE CONDITIONS OF USE.

### OCCUPATIONAL EXPOSURE LIMITS (Current ACGIH TLV/TWA unless otherwise noted):

Gasoline: 300 ppm (STEL: 500 ppm)

Benzene (skin) : 0.5 ppm (STEL: 2.5 ppm)

Skin Notation: Absorption through skin, eyes and mucous membranes may contribute significantly to the total exposure.

**Mechanical Ventilation:** Concentrations in air should be maintained below the occupational exposure limit if unprotected personnel are involved. Use explosion-proof ventilation as required to control vapour concentrations. Local ventilation recommended where mechanical ventilation is ineffective in controlling airborne concentrations below the recommended occupational exposure limit. Make up air should always be supplied to balance air exhausted (either generally or locally). For personnel entry into confined spaces (i.e. bulk storage tanks) a proper confined space entry procedure must be followed including ventilation and testing of tank atmosphere.

### PERSONAL PROTECTIVE EQUIPMENT:

- Eye Protection:** Chemical safety goggles and/or full face shield to protect eyes and face, if product is handled such that it could be splashed into eyes. Provide an eyewash station in the area.
- Skin Protection:** Avoid contact with skin. Use protective clothing and gloves manufactured from nitrile. Safety showers should be available for emergency use.
- Respiratory Protection:** Avoid breathing vapour or mists. If exposure has the potential to exceed occupational exposure limits, use an appropriate NIOSH-approved respirator. For high airborne concentrations, use a NIOSH-approved supplied-air respirator, either self-contained or airline breathing apparatus, operated in positive pressure mode.

## 9. PHYSICAL DATA

<b>Physical State:</b>	Volatile Liquid
<b>Appearance:</b>	Colourless
<b>Odour:</b>	Typical Gasoline Odour
<b>Odour Threshold:</b>	< 0.25 ppm
<b>Freezing/Pour Point:</b>	Not available
<b>Boiling Point:</b>	35 - 220 °C
<b>Density:</b>	720 - 760 kg/m <sup>3</sup> @ 15 °C
<b>Vapour Density (Air = 1):</b>	3.5
<b>Vapour Pressure (absolute):</b>	< 107 kPa @ 38 °C
<b>Specific Gravity (Water = 1):</b>	0.74
<b>pH:</b>	Not applicable
<b>Flash Point:</b>	Tag Closed Cup -30 °C
<b>Lower Flammable Limit:</b>	1.4 % (vol.)
<b>Upper Flammable Limit:</b>	7.6 % (vol.)
<b>Autoignition Temperature:</b>	280 °C
<b>Viscosity:</b>	< 1 cSt @ 38 °C
<b>Evaporation Rate (n-BuAc = 1):</b>	Not available
<b>Partition Coefficient (log K<sub>ow</sub>):</b>	2.3
<b>Water Solubility:</b>	Insoluble
<b>Other Solvents:</b>	Hydrocarbon Solvents
<b>Formula:</b>	C4 - C11

## 10. STABILITY AND REACTIVITY

<b>Chemically Stable:</b>	Yes
<b>Hazardous Polymerization:</b>	No
<b>Sensitive to Mechanical Impact:</b>	No
<b>Sensitive to Static Discharge:</b>	Yes
<b>Incompatible Materials:</b>	Avoid contact with strong oxidizing agents and acids.
<b>Conditions of Reactivity:</b>	Avoid excessive heat, open flames and all ignition sources.

## 11. TOXICOLOGICAL INFORMATION

<b>Ingredient (or Product if not specified)</b>	<b>Toxicological Data</b>
Gasoline	LD50 Dermal Rabbit > 5 mL/kg LD50 Oral Rat > 18 mL/kg
Benzene	LD50 Dermal Rabbit > 8260 mg/kg LC50 Inhalation Rat 13700 ppm for 4 hours LD50 Oral Rat 690 - 3400 mg/kg

<b>Routes of Exposure:</b>	Exposure will most likely occur through skin contact or inhalation.
<b>Formulation:</b>	No data is specifically available for this product and therefore this toxicological information is based on testing completed with the ingredients.
<b>Irritancy:</b>	Based on testing with similar materials, this product is not expected to be a primary skin irritant after exposure of short duration, would not be a skin sensitizer and would not be irritating to the eye.
<b>Acute Toxicity:</b>	Vapour concentrations above the recommended exposure level are irritating to the eyes and respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.
<b>Chronic Effects:</b>	Prolonged and repeated contact with skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis. Prolonged exposure to high vapour concentration can cause headache, dizziness, nausea, blurred vision and central nervous system depression. Prolonged and repeated exposure may cause serious injury to blood forming organs, resulting in anemia and similar conditions. Myelodysplastic syndrome (MDS) has been observed in people exposed to very high levels (50 to 300 ppm) of benzene over a long period of time in the workplace. The relevance of these results to lower levels of exposure is not known.
<b>Carcinogenicity and Mutagenicity:</b>	According to the International Agency for Research on Cancer (IARC) this product is considered to be possibly carcinogenic to humans. This product contains benzene. Carcinogenic hazard. Repeated exposure to benzene concentrations greater than the recommended TLV/TWA may reduce the cellular components of peripheral blood and bone marrow. Epidemiological studies indicate that long term inhalation of benzene vapour can cause leukaemia in man. Benzene has also produced chromosomal aberrations in peripheral blood lymphocytes.

## 12. ECOLOGICAL INFORMATION

Do not allow product or runoff from fire control to enter storm or sanitary sewers, lakes, rivers, streams, or public waterways. Block off drains and ditches. Provincial regulations require and federal regulations may require that environmental and/or other agencies be notified of a spill incident. Spill area must be cleaned and restored to original condition or to the satisfaction of authorities.

<b>Biodegradability:</b>	Inherently biodegradable. Rapid volatilization.
<b>Bioaccumulation:</b>	Potential for bioaccumulation.
<b>Partition Coefficient (log K<sub>ow</sub>):</b>	2.3

### Aquatic Toxicity

Product is expected to be toxic to aquatic organisms.

Ingredient:	Toxicological Data
<b>Gasoline</b>	EL50 - growth rate (WAF method) Algae (72hr) 1 - 10 mg/L. EL50 (WAF method) Daphnia Magna (48hr) 1 - 10 mg/L. LL50 (WAF method) Rainbow Trout (96hr) 1 - 10 mg/L.
<b>Benzene</b>	EL50 - growth rate Algae (72hr) 10 - 100 mg/L. EL50 Daphnia Magna (48hr) 10 - 100 mg/L. LL50 Rainbow Trout (96hr) 1 - 10 mg/L.

**Definition(s):** LL and EL are the lethal loading concentration and effective loading concentration respectively. The concentration represents the amount of substance added to the system to obtain a toxic concentration. They replace the traditional LC and EC for low solubility substances.

WAF is the water accommodated fraction. A slightly soluble hydrocarbon is stirred into water and the insoluble portions are removed. The remaining solution is the water accommodated fraction.

### 13. DISPOSAL CONSIDERATIONS

Waste management priorities (depending on volumes and concentration of waste) are: 1. recycle (reprocess), 2. energy recovery 3. incineration, 4. disposal at a licenced waste disposal facility. Do not attempt to combust waste on-site. Incinerate at a licenced waste disposal site with approval of environmental authority.

### 14. TRANSPORTATION INFORMATION

#### Canadian Road and Rail Shipping Classification:

UN Number	UN1203
Proper Shipping Name	GASOLINE
Hazard Class	Class 3 Flammable Liquids
Packing Group	PG II
Additional Information	Marine Pollutant
Shipping Description	GASOLINE Class 3 UN1203 PG II Marine Pollutant

### 15. REGULATORY INFORMATION

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

**WHMIS Class:** Class B2 Flammable Liquid  
Class D2A Carcinogenicity

**DSL/NDSL Status:** This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act. This product and/or all components are listed on the U.S. EPA TSCA Inventory.

**Other Regulatory Status:** No Canadian federal standards.

### 16. ADDITIONAL INFORMATION

#### LABEL STATEMENTS

**Hazard Statement :** Flammable Liquid.  
Contains Benzene.  
May cause cancer.

**Handling Statement:** Eliminate all ignition sources.  
Wear suitable gloves and eye protection.  
Bond and ground transfer containers and equipment to avoid static accumulation.  
Avoid prolonged exposure to vapours.  
Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

**First Aid Statement :** Wash contaminated skin with soap and water.  
Flush eyes with water.  
If overcome by vapours remove to fresh air.  
Do not induce vomiting.  
Obtain medical attention.

**Revisions:** This MSDS has been reviewed and updated.  
Section 1  
Section 2  
Section 3  
Section 4  
Section 5  
Section 6  
Section 7  
Section 8  
Section 11  
Section 12

**Shell Canada Limited**  
**Material Safety Data Sheet**

Effective Date: 2005-08-15

Supersedes: 2002-08-14

Class B3 Combustible Class D2B Other Toxic  
Liquid Effects - Skin Irritant**1. PRODUCT AND COMPANY IDENTIFICATION**

**PRODUCT:** SHELL\* JET A-1  
**SYNONYMS:** Aviation Turbine Fuel (Kerosene Type)  
May contain anti-icing additive (Diethylene Glycol Monomethyl Ether)  
**PRODUCT USE:** Fuel Solvent  
**MSDS Number:** 142-011

**MANUFACTURER**

**Shell Canada Limited**  
P.O. Box 100, Station M  
400-4th Ave. S.W.  
Calgary, AB Canada  
T2P 2H5

**TELEPHONE NUMBERS**

**Shell Emergency Number** 1-800-661-7378  
**CANUTEC 24 HOUR EMERGENCY NUMBER** 613-996-6666  
For general information: 1-800-661-1600  
For MSDS information: 403-691-3982  
(From 7:30 to 4:30 Mountain Time) 403-691-2220

This MSDS was prepared by the Toxicology and Product Stewardship Section of Shell Canada Limited.

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**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Component Name	CAS Number	% Range	WHMIS Controlled
Kerosene (Petroleum), Hydrodesulfurized	64742-81-0	60 - 100	Yes

See Section 8 for Occupational Exposure Guidelines.

**3. HAZARDS IDENTIFICATION**

**Physical Description:** Liquid Bright Clear Hydrocarbon Odour

**Routes of Exposure:** Exposure will most likely occur through skin contact or inhalation.

**Hazards:**

Combustible Liquid.  
Irritating to skin.  
Vapours are moderately irritating to the eyes.  
Ingestion may result in vomiting. Avoid aspiration of vomitus into lungs as small quantities may result in aspiration pneumonitis.  
Vapours are moderately irritating to the respiratory passages.

**Handling:** Eliminate all ignition sources.  
Avoid prolonged exposure to vapours.  
Wear suitable gloves and eye protection.  
Bond and ground transfer containers and equipment to avoid static accumulation.  
Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

For further information on health effects, see Section 11.

#### 4. FIRST AID

**Eyes:** Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.

**Skin:** Wash contaminated skin with mild soap and water for 15 minutes. If irritation occurs and persists, obtain medical attention.

**Ingestion:** DO NOT INDUCE VOMITING! OBTAIN MEDICAL ATTENTION IMMEDIATELY.  
Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously keep head below hips to prevent aspiration of liquid into the lungs.

**Inhalation:** Remove victim from further exposure and restore breathing, if required. Obtain medical attention.

**Notes to Physician:** The main hazard following accidental ingestion is aspiration of the liquid into the lungs producing chemical pneumonitis. If more than 2.0 mL/kg has been ingested, vomiting should be induced with supervision. If symptoms such as loss of gag reflex, convulsions or unconsciousness occur before vomiting, gastric lavage with a cuffed endotracheal tube should be considered.

#### 5. FIRE FIGHTING MEASURES

**Extinguishing Media:** Carbon Dioxide  
Foam  
Dry Chemical  
Water Fog

**Firefighting Instructions:** Caution - Combustible. Vapour forms a flammable/explosive mixture with air between upper and lower flammable limits. Vapours may travel along ground and flashback along vapour trail may occur. Product will float and can be reignited on surface of water. Do not use a direct stream of water as it may spread fire. Containers exposed to intense heat from fires should be cooled with water to prevent vapour pressure buildup which could result in container rupture. Container areas exposed to direct flame contact should be cooled with large quantities of water as needed to prevent weakening of container structure. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus.

**Hazardous Combustion Products:** A complex mixture of airborne solid, liquid, particulates and gases will evolve when this material undergoes pyrolysis or combustion. Carbon dioxide, carbon monoxide and unidentified organic compounds may be formed upon combustion.

## 6. ACCIDENTAL RELEASE MEASURES

Issue warning "Combustible". Eliminate all ignition sources. Isolate hazard area and restrict access. Handling equipment must be grounded. Try to work upwind of spill. Avoid direct contact with material. Wear appropriate breathing apparatus (if applicable) and protective clothing. Stop leak only if safe to do so. Dike and contain land spills; contain water spills by booming. Use water fog to knock down vapours; contain runoff. Absorb residue or small spills with absorbent material and remove to non-leaking containers for disposal. Recommended materials: Clay or Sand Flush area with water to remove trace residue. Dispose of recovered material as noted under Disposal Considerations. Notify appropriate environmental agency(ies).

## 7. HANDLING AND STORAGE

**Handling:** Avoid excessive heat, sparks, open flames and all other sources of ignition. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. Vapours are heavier than air and will settle and collect in low areas and pits, displacing breathing air. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapours are gone. Vapours may accumulate and travel to distant ignition sources and flashback. Do not cut, drill, grind, weld or perform similar operations on or near containers. Empty containers are hazardous, may contain flammable/explosive dusts, residues or vapours. Do not pressurize drum containers to empty them. Wash with soap and water prior to eating, drinking, smoking, applying cosmetics or using toilet facilities. Launder contaminated clothing prior to reuse. Use good personal hygiene. Combustible.

**Storage:** Store in a cool, dry, well ventilated area, away from heat and ignition sources. Keep container tightly closed.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

THE FOLLOWING INFORMATION, WHILE APPROPRIATE FOR THIS PRODUCT, IS GENERAL IN NATURE. THE SELECTION OF PERSONAL PROTECTIVE EQUIPMENT WILL VARY DEPENDING ON THE CONDITIONS OF USE.

### OCCUPATIONAL EXPOSURE LIMITS (Current ACGIH TLV/TWA unless otherwise noted):

Kerosene/Jet fuels, as total hydrocarbon vapour (skin) : 200 mg/m<sup>3</sup> ( Application restricted to conditions in which there are negligible aerosol exposures.)

Skin Notation: Absorption through skin, eyes and mucous membranes may contribute significantly to the total exposure.



**Mechanical Ventilation:** Use explosion-proof ventilation as required to control vapour concentrations. Concentrations in air should be maintained below the recommended threshold limit value if unprotected personnel are involved. Local ventilation recommended where mechanical ventilation is ineffective in controlling airborne concentrations below the recommended occupational exposure limit. Make up air should always be supplied to balance air exhausted (either generally or locally). For personnel entry into confined spaces (i.e. bulk storage tanks) a proper confined space entry procedure must be followed including ventilation and testing of tank atmosphere.

**PERSONAL PROTECTIVE EQUIPMENT:**

**Eye Protection:** Chemical safety goggles and/or full face shield to protect eyes and face, if product is handled such that it could be splashed into eyes. Provide an eyewash station in the area.

**Skin Protection:** Avoid contact with skin. Use protective clothing and gloves manufactured from nitrile. Safety showers should be available for emergency use.

**Respiratory Protection:** Avoid breathing vapour or mists. If exposure has the potential to exceed occupational exposure limits, use an appropriate NIOSH-approved respirator. Use a NIOSH-approved chemical cartridge respirator with organic vapour cartridges or use a NIOSH-approved supplied-air respirator.

**9. PHYSICAL DATA**

<b>Physical State:</b>	Liquid
<b>Appearance:</b>	Bright Clear
<b>Odour:</b>	Hydrocarbon Odour
<b>Odour Threshold:</b>	Not available
<b>Freezing/Pour Point:</b>	Freeze Point < -47 °C
<b>Boiling Point:</b>	145 - 300 °C
<b>Density:</b>	775 - 840 kg/m <sup>3</sup> @ 15 °C
<b>Vapour Density (Air = 1):</b>	Not available
<b>Vapour Pressure (absolute):</b>	1 - 1.4 kPa @ 37.8 °C
<b>pH:</b>	Not available
<b>Flash Point:</b>	Tag Closed Cup > 43 °C
<b>Lower Explosion Limit:</b>	0.7 % (vol.)
<b>Upper Explosion Limit:</b>	5 % (vol.)
<b>Autoignition Temperature:</b>	210 °C
<b>Viscosity:</b>	< 8 cSt @ -20 °C
<b>Evaporation Rate (n-BuAc = 1):</b>	Not available
<b>Partition Coefficient (log K<sub>ow</sub>):</b>	3.3 - 6
<b>Water Solubility:</b>	Insoluble
<b>Other Solvents:</b>	Hydrocarbon Solvents

**10. STABILITY AND REACTIVITY**

<b>Chemically Stable:</b>	Yes
<b>Hazardous Polymerization:</b>	No
<b>Sensitive to Mechanical Impact:</b>	No
<b>Sensitive to Static Discharge:</b>	Yes
<b>Hazardous Decomposition Products:</b>	Thermal decomposition products are highly dependent on combustion conditions.
<b>Incompatible Materials:</b>	Avoid strong oxidizing agents.

**Conditions of Reactivity:**

Avoid excessive heat, open flames and all ignition sources.

**11. TOXICOLOGICAL INFORMATION****Ingredient (or Product if not specified)**

Kerosene (Petroleum), Hydrodesulfurized

**Toxicological Data**

LD50 Dermal Rabbit &gt; 2000 mg/kg

LD50 Oral Rat &gt; 5000 mg/kg

**Routes of Exposure:**

Exposure will most likely occur through skin contact or inhalation.

**Irritancy:**

This product is expected to be irritating to skin but is not predicted to be a skin sensitizer.

**Chronic Effects:**

Prolonged and repeated contact with skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis. Prolonged exposure to high vapour concentration can cause headache, dizziness, nausea, blurred vision and central nervous system depression.

**Pre-existing****Conditions:**

Pre-existing eye, skin and respiratory disorders may be aggravated by exposure to this product.

**Carcinogenicity and  
Mutagenicity:**

The International Agency for Research on Cancer (IARC) considers that this product is not classifiable as to its carcinogenicity to humans. Middle distillates have caused skin cancers in laboratory animals when applied repeatedly and left in place between applications. This effect is believed to be caused by the continuous irritation of the skin. Good personal hygiene should be maintained to avoid this risk.

**12. ECOLOGICAL INFORMATION**

Do not allow product or runoff from fire control to enter storm or sanitary sewers, lakes, rivers, streams, or public waterways. Block off drains and ditches. Provincial regulations require and federal regulations may require that environmental and/or other agencies be notified of a spill incident. Spill area must be cleaned and restored to original condition or to the satisfaction of authorities. May cause physical fouling of aquatic organisms.

**Biodegradability:**

Not readily biodegradable.

Rapid volatilization.

**Bioaccumulation:**

Potential for bioaccumulation.

**Partition Coefficient (log K<sub>ow</sub>):**

3.3 - 6

**Aquatic Toxicity**

Product is expected to be toxic to aquatic organisms.

**Ingredient:****Kerosene  
(Petroleum),****Hydrodesulfurized****Toxicological Data**

EL50 - growth rate (WAF method) Algae (72hr) 1 - 10 mg/L.

EL50 (WAF method) Daphnia Magna (48hr) 1 - 10 mg/L.

LL50 (WAF method) Rainbow Trout (96hr) 1 - 10 mg/L.

**Definition(s):** LL and EL are the lethal loading concentration and effective loading concentration respectively. The concentration represents the amount of substance added to the system to obtain a toxic concentration. They replace the traditional LC and EC for low solubility substances.

WAF is the water accommodated fraction. A slightly soluble hydrocarbon is stirred into water and the insoluble portions are removed. The remaining solution is the water accommodated fraction.

### 13. DISPOSAL CONSIDERATIONS

Waste management priorities (depending on volumes and concentration of waste) are: 1. recycle (reprocess), 2. energy recovery (cement kilns, thermal power generation), 3. incineration, 4. disposal at a licenced waste disposal facility. Do not attempt to combust waste on-site. Incinerate at a licenced waste disposal site with approval of environmental authority.

### 14. TRANSPORTATION INFORMATION

#### Canadian Road and Rail Shipping Classification:

UN Number	UN1863
Proper Shipping Name	FUEL, AVIATION, TURBINE ENGINE
Hazard Class	Class 3 Flammable Liquids
Packing Group	PG III
Additional Information	Not Regulated in Containers Less Than or Equal to 450 Litres.
Shipping Description	FUEL, AVIATION, TURBINE ENGINE Class 3 UN1863 PG III Not Regulated in Containers Less Than or Equal to 450 Litres.

### 15. REGULATORY INFORMATION

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

<b>WHMIS Class:</b>	Class B3 Combustible Liquid Class D2B Other Toxic Effects - Skin Irritant
<b>DSL/NDSL Status:</b>	This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act.
<b>Other Regulatory Status:</b>	No Canadian federal standards.

### 16. ADDITIONAL INFORMATION

#### LABEL STATEMENTS

**Hazard Statement :** Combustible Liquid.  
Irritating to skin.

**Handling Statement:** Eliminate all ignition sources.  
Avoid prolonged exposure to vapours.  
Wear suitable gloves and eye protection.  
Bond and ground transfer containers and equipment to avoid static accumulation.  
Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

**First Aid Statement :** Wash contaminated skin with soap and water.  
Flush eyes with water.  
If overcome by vapours remove to fresh air.  
Do not induce vomiting.  
Obtain medical attention.

**Revisions:** This MSDS has been reviewed and updated.  
Changes have been made to:  
Section 3  
Section 4  
Section 5  
Section 7  
Section 8  
Section 9  
Section 12  
Section 14

**Shell Canada Limited**  
**Material Safety Data Sheet**Effective Date: 2005-11-07  
Supersedes: 2002-11-06Class B3 Combustible Class D2B Other Toxic  
Liquid Effects - Skin Irritant**1. PRODUCT AND COMPANY IDENTIFICATION**

PRODUCT: **ULTRA LOW SULPHUR DIESEL FUEL**  
SYNONYMS: Automotive Gas Oil  
PRODUCT USE: Fuel  
MSDS Number: 320-110

**SUPPLIER**

**Shell Canada Limited**  
P.O. Box 100, Station M  
400-4th Ave. S.W.  
Calgary, AB Canada  
T2P 2H5

**TELEPHONE NUMBERS****Shell Emergency Number**

1-800-661-7378

**CANUTEC 24 HOUR EMERGENCY NUMBER**

613-996-6666

For general information:

1-800-661-1600

For MSDS information:

403-691-3982

(From 7:30 to 4:30 Mountain Time)

403-691-2220

This MSDS was prepared by the Toxicology and Product Stewardship Section of Shell Canada Limited.

\*An asterisk in the product name designates a trade-mark(s) of Shell Canada Limited, used under license by Shell Canada Products.

**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Component Name	CAS Number	% Range	WHMIS Controlled
Fuels, Diesel, No. 2	68476-34-6	100	Yes

See Section 8 for Occupational Exposure Guidelines.

**3. HAZARDS IDENTIFICATION**

**Physical Description:** Liquid Lightly Coloured Hydrocarbon Odour

**Routes of Exposure:** Exposure will most likely occur through skin contact or inhalation.

**Hazards:**

Vapour concentrations above the recommended exposure level are irritating to the eyes and respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.

Combustible Liquid.  
Irritating to skin.  
Vapours are moderately irritating to the eyes.  
Ingestion may result in vomiting. Avoid aspiration of vomitus into lungs as small quantities may result in aspiration pneumonitis.  
Vapours are moderately irritating to the respiratory passages.

**Handling:** Eliminate all ignition sources.  
Avoid prolonged exposure to vapours.  
Wear suitable gloves and eye protection.  
Bond and ground transfer containers and equipment to avoid static accumulation.  
Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.

For further information on health effects, see Section 11.

#### 4. FIRST AID

**Eyes:** Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.

**Skin:** Wash contaminated skin with mild soap and water for 15 minutes. If irritation occurs and persists, obtain medical attention.

**Ingestion:** DO NOT INDUCE VOMITING! OBTAIN MEDICAL ATTENTION IMMEDIATELY. Guard against aspiration into lungs by having the individual turn on to their left side. If vomiting occurs spontaneously keep head below hips to prevent aspiration of liquid into the lungs. Do not give anything by mouth to an unconscious person.

**Inhalation:** Remove victim from further exposure and restore breathing, if required. Obtain medical attention.

**Notes to Physician:** The main hazard following accidental ingestion is aspiration of the liquid into the lungs producing chemical pneumonitis. If more than 2.0 mL/kg has been ingested, vomiting should be induced with supervision. If symptoms such as loss of gag reflex, convulsions or unconsciousness occur before vomiting, gastric lavage with a cuffed endotracheal tube should be considered.

#### 5. FIRE FIGHTING MEASURES

**Extinguishing Media:** Dry Chemical  
Carbon Dioxide  
Foam  
Water Fog

**Firefighting Instructions:** Caution - Combustible. Do not use a direct stream of water as it may spread fire. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus. Vapour forms a flammable/explosive mixture with air between upper and lower flammable limits. Vapours may travel along ground and flashback along vapour trail may occur. Avoid inhalation of smoke. Product will float and can be reignited on surface of water. Delayed lung damage can be experienced after exposure to combustion products, sometimes hours after the exposure.

**Hazardous Combustion Products:** A complex mixture of airborne solid, liquid, particulates and gases will evolve when this material undergoes pyrolysis or combustion. Carbon dioxide, carbon monoxide and unidentified organic compounds may be formed upon combustion.

## 6. ACCIDENTAL RELEASE MEASURES

Issue warning "Combustible". Eliminate all ignition sources. Isolate hazard area and restrict access. Handling equipment must be grounded. Try to work upwind of spill. Avoid direct contact with material. Wear appropriate breathing apparatus (if applicable) and protective clothing. Stop leak only if safe to do so. Dike and contain land spills; contain water spills by booming. Use water fog to knock down vapours; contain runoff. Absorb residue or small spills with absorbent material and remove to non-leaking containers for disposal. Recommended materials: Clay or Sand Flush area with water to remove trace residue. Dispose of recovered material as noted under Disposal Considerations. Notify appropriate environmental agency(ies).

## 7. HANDLING AND STORAGE

**Handling:** Combustible. Avoid excessive heat, sparks, open flames and all other sources of ignition. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. Vapours are heavier than air and will settle and collect in low areas and pits, displacing breathing air. Extinguish pilot lights, cigarettes and turn off other sources of ignition prior to use and until all vapours are gone. Vapours may accumulate and travel to distant ignition sources and flashback. Do not cut, drill, grind, weld or perform similar operations on or near containers. Empty containers are hazardous, may contain flammable/explosive dusts, residues or vapours. Do not pressurize drum containers to empty them. Wash with soap and water prior to eating, drinking, smoking, applying cosmetics or using toilet facilities. Launder contaminated clothing prior to reuse. Use good personal hygiene.

**Storage:** Store in a cool, dry, well ventilated area, away from heat and ignition sources. Keep container tightly closed.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

THE FOLLOWING INFORMATION, WHILE APPROPRIATE FOR THIS PRODUCT, IS GENERAL IN NATURE. THE SELECTION OF PERSONAL PROTECTIVE EQUIPMENT WILL VARY DEPENDING ON THE CONDITIONS OF USE.

### OCCUPATIONAL EXPOSURE LIMITS (Current ACGIH TLV/TWA unless otherwise noted):

Diesel fuel, as total hydrocarbons (skin): 100 mg/m<sup>3</sup>

Skin Notation: Absorption through skin, eyes and mucous membranes may contribute significantly to the total exposure.

**Mechanical Ventilation:** Concentrations in air should be maintained below the recommended threshold limit value if unprotected personnel are involved. Use explosion-proof ventilation as required to control vapour concentrations. Local ventilation recommended where mechanical ventilation is ineffective in controlling airborne concentrations below the recommended occupational exposure limit. Make up air should always be supplied to balance air exhausted (either generally or locally). For personnel entry into confined spaces (i.e. bulk storage tanks) a proper confined space entry procedure must be followed including ventilation and testing of tank atmosphere.

### PERSONAL PROTECTIVE EQUIPMENT:

**Eye Protection:** Chemical safety goggles and/or full face shield to protect eyes and face, if product is handled such that it could be splashed into eyes. Provide an eyewash station in the area.

- Skin Protection:** Impervious gloves (viton, nitrile) should be worn at all times when handling this material. In confined spaces or where the risk of skin exposure is much higher, impervious clothing should be worn. Safety showers should be available for emergency use.
- Respiratory Protection:** If exposure exceeds occupational exposure limits, use an appropriate NIOSH-approved respirator. Use a NIOSH-approved chemical cartridge respirator with organic vapour cartridges or use a NIOSH-approved supplied-air respirator. For high airborne concentrations, use a NIOSH-approved supplied-air respirator, either self-contained or airline breathing apparatus, operated in positive pressure mode.

## 9. PHYSICAL DATA

<b>Physical State:</b>	Liquid
<b>Appearance:</b>	Lightly Coloured
<b>Odour:</b>	Hydrocarbon Odour
<b>Odour Threshold:</b>	Not available
<b>Freezing/Pour Point:</b>	Varies with region and season
<b>Boiling Point:</b>	150 - 330 °C
<b>Density:</b>	< 881 kg/m <sup>3</sup> @ 15 °C
<b>Vapour Density (Air = 1):</b>	Not available
<b>Vapour Pressure (absolute):</b>	Not available
<b>pH:</b>	Not applicable
<b>Flash Point:</b>	Pensky-Martens CC > 40 °C
<b>Lower Explosion Limit:</b>	1 % (vol.)
<b>Upper Explosion Limit:</b>	6 % (vol.)
<b>Autoignition Temperature:</b>	250 °C
<b>Viscosity:</b>	1.7 - 3.6 cSt @ 40 °C
<b>Evaporation Rate (n-BuAc = 1):</b>	Not available
<b>Partition Coefficient (log K<sub>ow</sub>):</b>	Not available
<b>Water Solubility:</b>	Insoluble
<b>Other Solvents:</b>	Hydrocarbon Solvents
<b>Formula:</b>	C10 to C22 Hydrocarbons

## 10. STABILITY AND REACTIVITY

<b>Chemically Stable:</b>	Yes
<b>Hazardous Polymerization:</b>	No
<b>Sensitive to Mechanical Impact:</b>	No
<b>Sensitive to Static Discharge:</b>	Yes
<b>Hazardous Decomposition Products:</b>	Thermal decomposition products are highly dependent on combustion conditions.
<b>Incompatible Materials:</b>	Avoid strong oxidizing agents.
<b>Conditions of Reactivity:</b>	Avoid excessive heat, open flames and all ignition sources.

## 11. TOXICOLOGICAL INFORMATION

<b>Ingredient (or Product if not specified)</b>	<b>Toxicological Data</b>
Fuels, Diesel, No. 2	LD50 Dermal Rabbit > 5000 mg/kg LD50 Oral Rat = 9000 mg/kg

**Routes of Exposure:** Exposure will most likely occur through skin contact or inhalation.



<b>Irritancy:</b>	This product is expected to be irritating to skin but is not predicted to be a skin sensitizer.
<b>Acute Toxicity:</b>	Vapour concentrations above the recommended exposure level are irritating to the eyes and respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects.
<b>Chronic Effects:</b>	Prolonged and repeated contact with skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis. Prolonged exposure to high vapour concentration can cause headache, dizziness, nausea, blurred vision and central nervous system depression.
<b>Pre-existing Conditions:</b>	Pre-existing eye, skin and respiratory disorders may be aggravated by exposure to this product.
<b>Carcinogenicity and Mutagenicity:</b>	The International Agency for Research on Cancer (IARC) considers that this product is not classifiable as to its carcinogenicity to humans. Middle distillates have caused skin cancers in laboratory animals when applied repeatedly and left in place between applications. This effect is believed to be caused by the continuous irritation of the skin. Good personal hygiene should be maintained to avoid this risk. The American Conference of Governmental Industrial Hygienists (ACGIH) has classified this product as A3 - confirmed animal carcinogen with unknown relevance to humans.

## 12. ECOLOGICAL INFORMATION

Do not allow product or runoff from fire control to enter storm or sanitary sewers, lakes, rivers, streams, or public waterways. Block off drains and ditches. Provincial regulations require and federal regulations may require that environmental and/or other agencies be notified of a spill incident. Spill area must be cleaned and restored to original condition or to the satisfaction of authorities. May cause physical fouling of aquatic organisms.

<b>Biodegradability:</b>	Not readily biodegradable.
<b>Bioaccumulation:</b>	Potential for bioaccumulation.
<b>Partition Coefficient (log K<sub>OW</sub>):</b>	Not available

### Aquatic Toxicity

May be harmful to aquatic life.

<b>Ingredient:</b>	<b>Toxicological Data</b>
<b>Fuels, Diesel, No. 2</b>	EL50 - growth rate Algae (72hr) 10 - 100 mg/L. EL50 Daphnia Magna (48hr) 10 - 100 mg/L. LL50 (WAF method) Rainbow Trout (96hr) 10 - 100 mg/L.

<b>Definition(s):</b>	LL and EL are the lethal loading concentration and effective loading concentration respectively. The concentration represents the amount of substance added to the system to obtain a toxic concentration. They replace the traditional LC and EC for low solubility substances. WAF is the water accommodated fraction. A slightly soluble hydrocarbon is stirred into water and the insoluble portions are removed. The remaining solution is the water accommodated fraction.
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## 13. DISPOSAL CONSIDERATIONS

Waste management priorities (depending on volumes and concentration of waste) are: 1. recycle (reprocess), 2. energy recovery (cement kilns, thermal power generation), 3. incineration, 4. disposal at a licenced waste disposal facility. Do not attempt to combust waste on-site. Incinerate at a licenced waste disposal site with approval of environmental authority.

#### 14. TRANSPORTATION INFORMATION

##### Canadian Road and Rail Shipping Classification:

UN Number	UN1202
Proper Shipping Name	DIESEL FUEL
Hazard Class	Class 3 Flammable Liquids
Packing Group	PG III
Additional Information	Not Regulated in Containers Less Than or Equal to 450 Litres.
Shipping Description	DIESEL FUEL Class 3 UN1202 PG III
	Not Regulated in Containers Less Than or Equal to 450 Litres.

#### 15. REGULATORY INFORMATION

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

WHMIS Class:	Class B3 Combustible Liquid Class D2B Other Toxic Effects - Skin Irritant
DSL/NDL Status:	This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act. This product and/or all components are listed on the U.S. EPA TSCA Inventory.
Other Regulatory Status:	No Canadian federal standards.

#### 16. ADDITIONAL INFORMATION

##### LABEL STATEMENTS

Hazard Statement :	Combustible Liquid. Irritating to skin.
Handling Statement:	Eliminate all ignition sources. Avoid prolonged exposure to vapours. Wear suitable gloves and eye protection. Bond and ground transfer containers and equipment to avoid static accumulation. Empty containers are hazardous, may contain flammable / explosive dusts, liquid residue or vapours. Keep away from sparks and open flames.
First Aid Statement :	Wash contaminated skin with soap and water. Flush eyes with water. If overcome by vapours remove to fresh air. Do not induce vomiting. Obtain medical attention.

ULTRA LOW SULPHUR DIESEL FUEL

320-110  
Revision Number: 8

**Revisions:** This MSDS has been reviewed and updated.  
Changes have been made to:  
Section 1  
Section 3  
Section 5  
Section 8  
Section 9  
Section 12  
Section 14

**SECTION 1 – PRODUCT INFORMATION**

Product Name:	Propane	Supplier:	Superior Propane
Trade Name:	LPG (Liquefied Petroleum Gas), LP-Gas		A Division of Superior Plus LP
Chemical Formula:	C <sub>3</sub> H <sub>8</sub>		1111 - 49th Avenue N.E.
WHMIS Classification:	Class A – Compressed Gas		Calgary, AB T2E 8V2
	Class B, Division 1 – Flammable Gas	24-Hour	Business: (403) 730-7500
		Emergency Contact:	Canutec (613) 996-6666

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	CASE NO.	% VOLUME (v/v)	LD	SD (RAT, ORAL)
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	pH:	Not available
Boiling Point:	-42°C @ 1 atm	Solubility in Water :	Slight, 6.1% by volume @ 17.8°C
Freezing Point:	-188°C	Specific Gravity:	0.51 (water = 1)
Evaporation Rate:	Rapid (Gas at normal ambient conditions)	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.
Vapour Pressure:	1435 kPa (maximum) @ 37.8°C		
Vapour Density:	1.52 (Air = 1)		
Coefficient of Water/Oil Distribution:	Not available	Odour Threshold:	4800 ppm

With proper handling, transportation and storage, adding a chemical odourant such as ethyl mercaptan 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	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.
Method:	Closed cup	Special Fire Fighting Equipment:	Protective clothing, hose monitors, fog nozzles, self-contained breathing apparatus.
Flammable Limits:	Lower 2.4%, Upper 9.5%		
Auto Ignition Temperature:	432°C		
Hazardous Combustion Products:	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 allowed to leak to atmosphere.		
Sensitivity to Impact:	No		
Sensitivity to Static Discharge:	Yes		

**SECTION 5 – REACTIVITY DATA**

Stability:	Stable	Hazardous Decomposition Products:	Deficient primary and secondary air can produce carbon monoxide.
Conditions to Avoid:	Keep separate from oxidizing agents. Gas explodes spontaneously when mixed with chloride dioxide.	Hazardous Polymerization:	Will not occur.

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

## SECTION 6 – TOXICOLOGICAL PROPERTIES OF MATERIAL

Routes of Entry: Skin Contact, Eye Contact, Inhalation

**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:** Contact with Liquefied Petroleum Gas may cause frostbite or cold burns. Propane acts as a simple asphyxiant as oxygen content in air is displaced by the propane. At increasing concentration levels, propane may cause dizziness, headaches, loss of coordination, fatigue, unconsciousness and death.

**Chronic Exposure:** No reported effects from long term low level exposure.

**Sensitization to Product:** Not known to be a sensitizer.

**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.

**Other Toxicological Effects:** None

## SECTION 7 – PREVENTATIVE MEASURES

- Eyes:** Safety glasses or chemical goggles 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:** Use in well-ventilated areas. Use with explosion proof mechanical ventilation in confined spaces or poorly ventilated areas.

## SECTION 8 – EMERGENCY AND FIRST AID PROCEDURES

- 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: Liquefied Petroleum Gas (Propane)

PIN Number: UN1075

## SECTION 10 – PREPARATION INFORMATION

Prepared by: Superior Propane  
Health Safety and Environment Team

Telephone: (403) 730-7500  
Revision: November 1, 2006  
Supersedes: May 9, 2005

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