SCHEDULE 2

MATERIAL SAFETY DATA SHEET

MATERIAL SAFETY DATA SHEET

15640 Mountainview Dr., Surrey, BC, Canada V3S 0C6 • Toll Free **1-866-535-6699**
Tel: **604-535-6699** Fax: 604-535-5493 *e-mail: extreme.ron@telus.net*

EMERGENCY PHONE NO. (604) 535-6699

EXTREME SUPER-G GOLD

WHMIS HAZARD INDEX:

DEGREE OF HAZARD:		**HAZARD RATING:**	
HEALTH	1	0	LEAST
FIRE	0	1	SLIGHT
REACTIVITY	0	2	MODERATE
OTHER:	B (GLASSES & GLOVES)	3	HIGH
		4	EXTREME

SECTION 1 PRODUCT IDENTIFICATION

PRODUCT NAME:	EXTREME SUPER-G GOLD
CHEMICAL IDENTIFICATION:	Polysaccharide suspension
MATERIAL USE:	Drilling mud additive
WHMIS CLASSIFICATION:	D2B
WORK PLACE HAZARD:	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:	Ethoxylated nonyl phenol
PERCENTAGE:	1-5
CAS NUMBER:	9016-45-9
LD (50):	5100mg/kg
LC (50):	

EXTREME SUPER-G GOLD

MATERIAL SAFETY DATA SHEET

SECTION 3 PHYSICAL DATA

APPEARANCE AND ODOUR:	Opaque dark yellow to beige liquid – little odour
DENSITY (SPECIFIC GRAVITY):	1.078
BOILING POINT:	Undetermined
MELTING POINT:	Undetermined
SOLUBILITY:	Dispersible
EVAPORATION RATE: (EE=1):	Undetermined
VAPOUR PRESSURE: (MM HG):	Undetermined
VAPOUR DENSITY: (AIR = 1):	Undetermined

SECTION 4 FIRE AND EXPLOSION

FLASHPOINT:	Not flammable
FLAMMABLE LIMIT:	Undetermined
AUTO IGNITION TEMP:	NA
EXTINGUISHING MEDIA:	CO_2; Foam; Dry Chemical; Water Spray
SPECIAL FIRE FIGHTING PROCEDURES:	NA
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Forms slippery mixture with water

SECTION 5 REACTIVITY DATA

STABILITY (THERMAL, LIGHT, ETC.):	Stable
INCOMPATIBILITY (CONDITIONS TO AVOID):	Strong Oxidizers & acids
HAZARDOUS POLYMERIZATION:	Will not occur
HAZARDOUS DECOMPOSITION PRODUCTS:	CO_2, smoke on combustion

EXTREME SUPER-G GOLD

MATERIAL SAFETY DATA SHEET

SECTION 6 HEALTH HAZARDS

ROUTE OF ENTRY:
(XX) SKIN (XX) EYE CONTACT ( ) INHALATION (XX) INGESTION

SKIN CONTACT:	Irritant. Can cause redness & irritation
EYE CONTACT:	Severe irritant. Can cause redness & irritation
INHALATION:	Unlikely. May cause upper respiratory tract irritation
INGESTION:	May cause nausea, diarrhea and/ or abdominal cramps

SECTION 7 PREVENTATIVE MEASURES

SKIN PROTECTION:	Chemically resistant gloves
EYE PROTECTION:	Safety glasses
VENTILATION:	General mechanical
RESPIRATORY PROTECTION:	NIOSH approved organic respirator if ventilation inadequate
LEAK & SPILL PROCEDURE:	Small spills: soak up with absorbent material Large spills: dike to contain spill to prevent water pollution. Water will cause extreme slipperiness
WASTE DISPOSAL:	Incinerate/dispose of in accordance with local disposal regulations
STORAGE REQUIREMENTS:	Store in a cool, well-ventilated area

EXTREME SUPER-G GOLD

MATERIAL SAFETY DATA SHEET

SECTION 8 FIRST AID MEASURES

SKIN:	Immediately wash with soap & water for 5 mins. Seek medical help if irritation develops/persists
EYE:	Hold eyelids open & flush with a steady stream of water for 15 mins. Seek medical attention
INHALATION:	Unlikely. If respiratory irritation occurs, move to fresh air. If symptoms continue, seek medical help
INGESTION:	If conscious & alert, give 2 glasses water. Never give unconscious person anything by mouth. Seek medical help; do not leave unconscious person unattended. Do not induce vomiting

SECTION 9 PREPARATION 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 TORQ-EEZ

EMERGENCY PHONE NO. (604) 535-6699

WHMIS HAZARD INDEX:

DEGREE OF HAZARD:		**HAZARD RATING:**	
HEALTH	1	0	LEAST
FIRE	0	1	SLIGHT
REACTIVITY	1	2	MODERATE
OTHER:	B (GLASSES & GLOVES)	3	HIGH
		4	EXTREME

SECTION 1 PRODUCT IDENTIFICATION

PRODUCT NAME:	EXTREME TORQ-EEZ
CHEMICAL IDENTIFICATION:	Proprietary
MATERIAL USE:	Drilling Fluid Lubricant
WHMIS CLASSIFICATION:	Non Hazardous
WORK PLACE HAZARD:	Not Available

TRANSPORTATION OF DANGEROUS GOODS (TDGR)

CLASSIFICATION:	Not Dangerous Goods
PACKAGE GROUP:	Not Available
CAS NUMBER:	Not Available
MSDS CODE:	Not Available

SECTION 2 HAZARDOUS INGREDIENTS

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

EXTREME TORQ-EEZ

MATERIAL SAFETY DATA SHEET

SECTION 3 PHYSICAL DATA

APPEARANCE AND ODOUR:	Amber liquid with mild odour
DENSITY (SPECIFIC GRAVITY):	1.0
BOILING POINT:	100°C
MELTING POINT:	Not Determined
SOLUBILITY:	Complete
EVAPORATION RATE: (EE=1):	Not Available
VAPOUR PRESSURE: (MM HG):	Not Available
VAPOUR DENSITY: (AIR = 1):	Not Available
pH:	9.0 - 10.0

SECTION 4 FIRE AND EXPLOSION

FLASHPOINT:	N/A
FLAMMABLE LIMIT:	Aqueous Mixture - Non Flammable
AUTO IGNITION TEMP:	Not Determined
EXTINGUISHING MEDIA:	Dry Chemical, Foam CO_2, Water Spray
SPECIAL FIRE FIGHTING PROCEDURES:	None required
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:	N/A

EXTREME TORQ-EEZ

MATERIAL SAFETY DATA SHEET

SECTION 6 HEALTH HAZARDS

ROUTE OF ENTRY:

(X) SKIN (X) EYE CONTACT ( ) INHALATION (X) INGESTION

SKIN CONTACT:	Prolonged contact may cause skin irritation.
EYE CONTACT:	May be irritating to eyes on direct contact.
INHALATION:	Not expected to present a hazard at ambient temperatures.
INGESTION:	May cause nausea and vomiting.

SECTION 7 PREVENTATIVE MEASURES

SKIN PROTECTION:	Impervious gloves, protective clothing as required.
EYE PROTECTION:	Goggles
VENTILATION:	10 Changes per hour
RESPIRATORY PROTECTION:	None normally required
LEAK & SPILL PROCEDURE:	Dam to prevent spreading. Soak up with absorbent material. Dispose of with solid waste.
WASTE DISPOSAL:	Dispose of in compliance with government regulation and local requirements.
STORAGE REQUIREMENTS:	Store in cool, dry area, away from oxidizing agents. Keep containers closed when not in use.

EXTREME TORQ-EEZ

MATERIAL SAFETY DATA SHEET

SECTION 8 FIRST AID MEASURES

SKIN:	Wash thoroughly with soap and water.
EYE:	Flush with water for at least 15 minutes. Seek medical attention.
INHALATION:	No expected problems due to low volatility.
INGESTION:	Induce vomiting. Give two glasses of water. Consult a physician at once.

SECTION 9 PREPARATION DATE

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

DATE REVISED: AUGUST 20, 2004

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EXTREME CLAY SEAM

EMERGENCY PHONE NO. (604) 535-6699

WHMIS HAZARD INDEX:

DEGREE OF HAZARD:		**HAZARD RATING:**	
HEALTH	1	0	LEAST
FIRE	1	1	SLIGHT
REACTIVITY	0	2	MODERATE
OTHER:	B (GLASSES & GLOVES)	3	HIGH
		4	EXTREME

SECTION 1 PRODUCT IDENTIFICATION

PRODUCT NAME:	EXTREME CLAY SEAM
CHEMICAL IDENTIFICATION:	Polyacrylic Acid
MATERIAL USE:	Specialty Clay Dispersant
WHMIS CLASSIFICATION:	Class D-2B
WORK PLACE HAZARD:	Skin, Eye Irritant

TRANSPORTATION OF DANGEROUS GOODS (TDGR)

CLASSIFICATION:	Not Dangerous Goods
PACKAGE GROUP:	Not Applicable
CAS NUMBER:	9003-01-4:2
MSDS CODE:	Not Applicable

SECTION 2 HAZARDOUS INGREDIENTS

INGREDIENT:	Polyacrylic Acid
PERCENTAGE:	30 - 60%
CAS NUMBER:	9003-01-4:2
LD (50):	Not Available
LC (50):	Not Available

EXTREME CLAY SEAM

MATERIAL SAFETY DATA SHEET

SECTION 3 PHYSICAL DATA

APPEARANCE AND ODOUR:	Liquid, water white to straw colour, mild odour
DENSITY (SPECIFIC GRAVITY):	1.3
BOILING POINT:	> 100°C
MELTING POINT:	Not Applicable
SOLUBILITY:	Soluble
EVAPORATION RATE: (EE=1):	Slower than butyl acetate
VAPOUR PRESSURE: (MM HG):	< 17.5
VAPOUR DENSITY: (AIR = 1):	Same as air
pH:	5.0 - 7.0

SECTION 4 FIRE AND EXPLOSION

FLASHPOINT:	> 100°C PMCC
FLAMMABLE LIMIT:	Not available
AUTO IGNITION TEMP:	No data
EXTINGUISHING MEDIA:	Dry chemical, carbon dioxide, foam, water spray
SPECIAL FIRE FIGHTING PROCEDURES:	Self-contained respirators for fire fighting personnel.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Acrid smoke may be generated while burning. carbon monoxide, carbon dioxide, and other oxides may be generated as products of combustion.

SECTION 5 REACTIVITY DATA

STABILITY (THERMAL, LIGHT, ETC.):	Stable
INCOMPATIBILITY (CONDITIONS TO AVOID):	Strong oxidizing agents and reducing agents, contamination with reactive substances, excessive heat
HAZARDOUS POLYMERIZATION:	Will not occur
HAZARDOUS DECOMPOSITION PRODUCTS:	Acrid smoke, fumes when heated to decomposition. Oxides of carbon.

EXTREME CLAY SEAM

MATERIAL SAFETY DATA SHEET

SECTION 6 HEALTH HAZARDS

ROUTE OF ENTRY:
(X) SKIN (X) EYE CONTACT (X) INHALATION (X) INGESTION

SKIN CONTACT:	May be minimally irritating to sensitive skin upon prolonged direct contact.
EYE CONTACT:	May be minimally irritating to eyes upon direct contact.
INHALATION:	Product has low vapour pressure and is not expected to present a hazard at ambient temperatures. Caution should be taken to avoid misting.
INGESTION:	Product is practically non toxic by ingestion.

SECTION 7 PREVENTATIVE MEASURES

SKIN PROTECTION:	Impervious gloves, protective clothing as required
EYE PROTECTION:	Chemical goggles.
VENTILATION:	None required for normal use. Adequate ventilation required if mist is generated.
RESPIRATORY PROTECTION:	Use NIOSH - Approved air-purifying respirator if vapours are generated.
LEAK & SPILL PROCEDURE:	Absorb with earth or sand and dispose of with solid waste. Wash site after spilled material has been collected.
WASTE DISPOSAL:	Dispose in compliance with government regulations and local requirements.
STORAGE REQUIREMENTS:	Cool, dry area, away from sources of heat, alkalis, oxidizing and reducing agents. Keep containers closed when not in use.

EXTREME CLAY SEAM

MATERIAL SAFETY DATA SHEET

SECTION 8 FIRST AID MEASURES

SKIN:	Wash thoroughly with soap and warm water
EYE:	Flush with water for at least 15 minutes.
INHALATION:	Vapour pressure is negligible. Remove victim from further exposure.
INGESTION:	Do not induce vomiting. If conscious, dilute by giving two glasses of water. Seek medical attention.

SECTION 9 PREPARATION DATE

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

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EXTREME EXTRA HIGH YIELD GEL

EMERGENCY PHONE NO. (604) 535-6699

WHMIS HAZARD INDEX:

DEGREE OF HAZARD:		**HAZARD RATING:**	
HEALTH	1	0	LEAST
FIRE	0	1	SLIGHT
REACTIVITY	1	2	MODERATE
OTHER:	B (GLASSES & GLOVES)	3	HIGH
		4	EXTREME

SECTION 1 PRODUCT IDENTIFICATION

PRODUCT NAME:	EXTREME EXTRA HIGH YIELD GEL
CHEMICAL IDENTIFICATION:	Sodium Montmorillonite
MATERIAL USE:	Drilling Mud Additive
WHMIS CLASSIFICATION:	D-2(A)
WORK PLACE HAZARD:	Low concentrations of free silica in airborne dust. Limited evidence as a Carcinogen from inhaled crystalline silica.

TRANSPORTATION OF DANGEROUS GOODS (TDGR)

CLASSIFICATION:	Not Dangerous Goods
PACKAGE GROUP:	Not Applicable
CAS NUMBER:	1302-78-9
MSDS CODE:	Not Applicable

SECTION 2 HAZARDOUS INGREDIENTS

INGREDIENT:	Crystalline Silica (SiO_2)	Crystobalite	Tridymite	Bentonite Dust
PERCENTAGE:	See Below	See Below	See Below	See Below
CAS NUMBER:	14808-60-7	14469-46-1	15468-32-3	1302-78-9
LD (50):	Not Determined	Not Determined	N/D	N/D
LC (50):	Not Determined	Not Determined	N/D	N/D
OSHA PEL:	.1 mg/M^3	.05 mg/M^3	.05 mg/M^3	5 mg/M^3
ACGIH TVL:	.1 mg/M^3	.05 mg/M^3	.05 mg/M^3	N/D

EXTREME EXTRA HIGH YIELD GEL

MATERIAL SAFETY DATA SHEET

SECTION 3 PHYSICAL DATA

APPEARANCE AND ODOUR:	Bluegray to green as moist solid, light tan to gray as dry powder. No odour.
DENSITY (SPECIFIC GRAVITY):	2.4 - 2.55
BOILING POINT:	Not Applicable
MELTING POINT:	Approx. 1450°C
SOLUBILITY:	Insoluble, forms colloidal suspension.
EVAPORATION RATE: (EE=1):	N/A
VAPOUR PRESSURE: (MM HG):	N/A
VAPOUR DENSITY: (AIR = 1):	N/A

SECTION 4 FIRE AND EXPLOSION

FLASHPOINT:	N/A
FLAMMABLE LIMIT:	N/A
AUTO IGNITION TEMP:	N/A
EXTINGUISHING MEDIA:	None for product. Any media for packaging.
SPECIAL FIRE FIGHTING PROCEDURES:	None
UNUSUAL FIRE AND EXPLOSION HAZARDS:	None. Product becomes slippery when wet.

SECTION 5 REACTIVITY DATA

STABILITY (THERMAL, LIGHT, ETC.):	Stable
INCOMPATIBILITY (CONDITIONS TO AVOID):	None
HAZARDOUS POLYMERIZATION:	None
HAZARDOUS DECOMPOSITION PRODUCTS:	None

EXTREME EXTRA HIGH YIELD GEL

MATERIAL SAFETY DATA SHEET

SECTION 6 HEALTH HAZARDS

ROUTE OF ENTRY:
(X) SKIN (X) EYE CONTACT (X) INHALATION (X) INGESTION

SKIN CONTACT:	Possible drying resulting in dermatitis.
EYE CONTACT:	Mechanical Irritant
INHALATION:	Acute (short term): Dust levels exceeding PEL may cause irritation of upper respiratory tract. Chronic (long term): Exposure to dust levels higher than TLV may lead to silicosis or other respiratory problems.
INGESTION:	No adverse effects.

SECTION 7 PREVENTATIVE MEASURES

SKIN PROTECTION:	Generally not necessary.
EYE PROTECTION:	Goggles may be preferred if dusty conditions develop.
VENTILATION:	Mechanical, general room ventilation. Use local ventilation to maintain REL's/TLV's.
RESPIRATORY PROTECTION:	Use respirators approved by NIOSH/MSHA for silica dust.
LEAK & SPILL PROCEDURE:	Avoid breathing dust. Wear silica approved respirator. Vacuum up to avoid generating dust. Avoid using water, product becomes slippery.
WASTE DISPOSAL:	Dispose of in compliance with local and government regulations.
STORAGE REQUIREMENTS:	Store in dry area. Product becomes slippery when wet.

EXTREME EXTRA HIGH YIELD GEL

MATERIAL SAFETY DATA SHEET

SECTION 8 FIRST AID MEASURES

SKIN:	Wash with soap and water until clean.
EYE:	Flush with water until irritation ceases.
INHALATION:	Move to dust free area. Inhalation may aggravate existing respiratory illness. Seek medical attention if symptoms persist.
INGESTION:	No adverse effects from small quantities.

SECTION 9 PREPARATION DATE

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

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DATE REVISED: AUGUST 20, 2004

EXTRA HIGH YIELD GEL

EXTRA HIGH YIELD GEL is a premium grade beneficiated Wyoming Bentonite designed for use in mineral exploration, water well, and seismic drilling operations. In field applications it has been successful in reducing the amount of bentonite needed to effectively carry drilled solids from the bore hole.

- High yielding bentonite viscosifier: 220 barrel yield.
- Mixes rapidly for fast hydration.
- Carries cuttings in mud with lower solids content
- Enhances fluid loss characteristics; reduces seeping into permeable formations.
- Assists in bore hole stabilization.
- Helps eliminate loss circulation conditions.
- Mix 15 to 25 pounds per 100 gallons of make-up water.
- Increase to 20 to 40 pounds per 100 gallons in areas of unstable formations.
- Packaged in 50 pound multi-walled paper bags.

This product is designed to be flushed out of the well bore prior to using the well for drinking water. Before placing a well in service for drinking water it is to be properly flushed and drained until the turbidity of the water is <1 NTU above ambient turbidity.

DRILLING FLUID PREPARATION

Always adjust make-up water in tank to a pH of 8 to 9 before adding bentonite and/or polymer. Public water supply often has a pH of only 6.5 to 7. Start by adding 6 oz. of soda ash to 300 gal. and add more as required to maintain a pH of 8 to 9. Add Extra High Yield Bentonite for initial desired funnel viscosity, then add Uni-Drill liquid polymer for final desired funnel viscosity.

For 300 Gal. of Volume

Soil Type	Desired Drilling Fluid Properties	Soda Ash	Extra High Yield Bentonite	Uni-Drill Polymer
I. Clay either Soft or Hard	Lower funnel viscosity and lower fluid loss	1/4 lb. ± pH 8 - 9	Add 1 ± sack for a viscosity of 30 - 35 sec/qt.	Add 3-4 ± qts. for a viscosity of 40-45 sec/qt. Add more if clay sticks to steel or torque increases.
II. Sand either Dry or Wet	Higher funnel viscosity and moderate fluid loss	1/4 lb. ± pH 8 - 9	Add 2 ± sacks for a viscosity of 45 - 55 sec/qt.	Add 1-2 ± qts. for a viscosity of 55-65 sec/qt. Add more if needed for lubricity.
III. Unknown or Medium Soils	Moderate funnel viscosity and moderate fluid loss	1/4 lb. ± pH 8 - 9	Add 1-1/2 ± sacks for a viscosity of 35 - 40 sec/qt.	Add 2-3 ± qts. for a viscosity of 45-55 sec/qt. Can add more if necessary.

NOTE: Approximate additive quantities are based on a 300 gallon tank.

MATERIAL SAFETY DATA SHEET

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EXTREME LINSEED LUBE

EMERGENCY PHONE NO. (604) 535-6699

WHMIS HAZARD INDEX:

DEGREE OF HAZARD:		**HAZARD RATING:**	
HEALTH	1	0	LEAST
FIRE	1	1	SLIGHT
REACTIVITY	0	2	MODERATE
OTHER:	B (GLASSES & GLOVES)	3	HIGH
		4	EXTREME

SECTION 1 PRODUCT IDENTIFICATION

PRODUCT NAME:	EXTREME LINSEED LUBE
CHEMICAL IDENTIFICATION:	Linseed Soap
MATERIAL USE:	Lubricating Compound
WHMIS CLASSIFICATION:	N/A
WORK PLACE HAZARD:	N/A

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:	Linseed Soap
PERCENTAGE:	100%
CAS NUMBER:	Mixture
LD (50):	
LC (50):	

EXTREME LINSEED LUBE

MATERIAL SAFETY DATA SHEET

SECTION 3 PHYSICAL DATA

APPEARANCE AND ODOUR:	Brown Colour, Semi-Solid Grease, Slight Hydrocarbon Odour.
DENSITY (SPECIFIC GRAVITY):	1.0
BOILING POINT:	100°C
MELTING POINT:	Not Available
SOLUBILITY:	Soluble
EVAPORATION RATE: (EE=1):	Not Available
VAPOUR PRESSURE: (MM HG):	Not Available
VAPOUR DENSITY: (AIR = 1):	Not Available

SECTION 4 FIRE AND EXPLOSION

FLASHPOINT:	222°C
FLAMMABLE LIMIT:	Not Available
AUTO IGNITION TEMP:	343°C
EXTINGUISHING MEDIA:	Dry Chemical, Foam, Water Fog, CO_2
SPECIAL FIRE FIGHTING PROCEDURES:	No special requirements. Caution, Spilled Material is slippery.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	None currently known.

SECTION 5 REACTIVITY DATA

STABILITY (THERMAL, LIGHT, ETC.):	No Data
INCOMPATIBILITY (CONDITIONS TO AVOID):	Not Available
HAZARDOUS POLYMERIZATION:	Will not occur
HAZARDOUS DECOMPOSITION PRODUCTS:	No Data

EXTREME LINSEED LUBE

MATERIAL SAFETY DATA SHEET

SECTION 6 HEALTH HAZARDS

ROUTE OF ENTRY:
(X) SKIN (X) EYE CONTACT (X) INHALATION (X) INGESTION

SKIN CONTACT:	Prolonged and repeated contact may cause drying of skin resulting in irritation and dermatitis.
EYE CONTACT:	May cause eye irritation.
INHALATION:	Oil mist or vapours from hot grease may cause irritation of upper respiratory tract.
INGESTION:	Harmful if swallowed.

SECTION 7 PREVENTATIVE MEASURES

SKIN PROTECTION:	Impervious gloves and protective clothing as required.
EYE PROTECTION:	No special requirements under normal conditions.
VENTILATION:	No special requirements under normal conditions.
RESPIRATORY PROTECTION:	None required under normal use. Otherwise use self-contained respirator if conditions of oil mist exist.
LEAK & SPILL PROCEDURE:	Contain and gather up with use of absorbent material.
WASTE DISPOSAL:	Dispose of in compliance with local and government regulations.
STORAGE REQUIREMENTS:	Store in a cool, dry area. Keep containers closed when not in use.

EXTREME LINSEED LUBE

MATERIAL SAFETY DATA SHEET

SECTION 8 FIRST AID MEASURES

SKIN:	Wipe excess from skin. Wash with mild soap and water. Remove contaminated clothing.
EYE:	Flush with water for at least 15 minutes.
INHALATION:	Not ordinarily required under normal conditions. Remove victim from further exposure.
INGESTION:	Do not induce vomiting. Obtain medical attention immediately.

SECTION 9 PREPARATION DATE

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

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EXTREME NUMBER ONE

EMERGENCY PHONE NO. (604) 535-6699

WHMIS HAZARD INDEX:

DEGREE OF HAZARD:		**HAZARD RATING:**	
HEALTH	1	0	LEAST
FIRE	0	1	SLIGHT
REACTIVITY	0	2	MODERATE
OTHER:	B (GLASSES & GLOVES)	3	HIGH
		4	EXTREME

SECTION 1 PRODUCT IDENTIFICATION

PRODUCT NAME:	EXTREME NUMBER ONE
CHEMICAL IDENTIFICATION:	Acrylamide, Acrylate Copolymer
MATERIAL USE:	Drilling Fluid Additive
WHMIS CLASSIFICATION:	Not Regulated
WORK PLACE HAZARD:	Not Applicable

TRANSPORTATION OF DANGEROUS GOODS (TDGR)

CLASSIFICATION:	Not Dangerous Goods
PACKAGE GROUP:	Not Applicable
CAS NUMBER:	Not Applicable
MSDS CODE:	Not Applicable

SECTION 2 HAZARDOUS INGREDIENTS

INGREDIENT:	None Considered Hazardous
PERCENTAGE:	Not Available
CAS NUMBER:	Not Available
LD (50):	Not Available
LC (50):	Not Available

EXTREME NUMBER ONE

MATERIAL SAFETY DATA SHEET

SECTION 3 PHYSICAL DATA

APPEARANCE AND ODOUR:	Slight, mild odour, white, granular solid
DENSITY (SPECIFIC GRAVITY):	.80
BOILING POINT:	Not Available
MELTING POINT:	Not Available
SOLUBILITY:	Soluble
EVAPORATION RATE: (EE=1):	Not Available
VAPOUR PRESSURE: (MM HG):	Not Available
VAPOUR DENSITY: (AIR = 1):	Not Available

SECTION 4 FIRE AND EXPLOSION

FLASHPOINT:	Not Applicable
FLAMMABLE LIMIT:	Not Available
AUTO IGNITION TEMP:	No Data
EXTINGUISHING MEDIA:	Dry Chemical, Carbon Dioxide, Foam
SPECIAL FIRE FIGHTING PROCEDURES:	Self-Contained Respirators For Fire Fighting Personnel.
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Products of incomplete combustion and oxides of nitrogen and carbon.

SECTION 5 REACTIVITY DATA

STABILITY (THERMAL, LIGHT, ETC.):	Stable
INCOMPATIBILITY (CONDITIONS TO AVOID):	Strong oxidizing agents and highly alkaline solutions
HAZARDOUS POLYMERIZATION:	Will not occur
HAZARDOUS DECOMPOSITION PRODUCTS:	None

EXTREME NUMBER ONE

MATERIAL SAFETY DATA SHEET

SECTION 6 HEALTH HAZARDS

ROUTE OF ENTRY:
(X) SKIN (X) EYE CONTACT (X) INHALATION (X) INGESTION

SKIN CONTACT:	May be minimally irritating to sensitive skin upon prolonged direct contact.
EYE CONTACT:	May be minimally irritating to eyes upon direct contact.
INHALATION:	May cause irritation to nose and throat.

SECTION 7 PREVENTATIVE MEASURES

SKIN PROTECTION:	Impervious gloves, protective clothing as required
EYE PROTECTION:	Goggles.
VENTILATION:	General mechanical; 10 changes per hour.
RESPIRATORY PROTECTION:	Approved dust mask; MESA type
LEAK & SPILL PROCEDURE:	Ventilate area, wear rubber boots, gloves and a self-contained respirator if ventilation inadequate. Collect into waste container. wash site after pick up. Water solutions extremely slippery.
WASTE DISPOSAL:	Dispose in compliance with government regulations and local requirements.
STORAGE REQUIREMENTS:	Cool, dry area, away from oxidizing and reducing agents. Keep containers closed when not in use. Avoid prolonged contact when handling. Do not inhale dust.

EXTREME NUMBER ONE

MATERIAL SAFETY DATA SHEET

SECTION 8 FIRST AID MEASURES

SKIN:	Wash thoroughly with soap and warm water
EYE:	Flush with water for at least 15 minutes. Seek medical attention.
INHALATION:	Remove to fresh air. if not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical attention.
INGESTION:	Do not induce vomiting. If conscious, dilute by giving two glasses of water. Seek medical attention.

SECTION 9 PREPARATION DATE

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

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DATE REVISED: AUGUST 20, 2004

EXTREME NUMBER ONE

MATERIAL SAFETY DATA SHEET

ADDENDUM

SECTION 10 ECOLOGICAL INFORMATION

ACUTE TOXICITY:

- Oral: LD50/oral/rat > 5000 mg/kg
- Dermal: The results of lab testing showed this material to be non-toxic even at high dose levels.
- Inhalation: The product is not expected to be toxic by inhalation.

IRRITATION:

- Skin: The results of lab testing showed this material to be non-irritating to the skin.
- Eyes: Testing conducted according to the Draize technique showed the material produces no corneal or iridial effects and only slight transitory conjunctival effects similar to those which all granular materials have no conjuctivae.

SENSITIZATION: The results of lab testing showed this material to be non-sensitizing.

CHRONIC TOXICITY: The results of extensive lab testing did not reveal adverse health effects.

ECOTOXICITY

- Fish: LC50 / Fathead minnows / 96 hours > 1000 mg/l
- Algae: EC50 / Selenastrum capricornutum > 96 hours > 500 mg/l

Bioaccumulation: The product is not expected to bioaccumulate.

Persistence / degradability: Not readily biodegradable.

Product Information

EXTREME
PRODUCTS & DRILLING SUPPLIES INC.

15640 Mountainview Dr., Surrey, BC, Canada V3S 0C6 • Toll Free **1-866-535-6699**
Tel: **604-535-6699** Fax: 604-535-5493 *e-mail: extreme.ron@telus.net*

Extreme Number One

Granular Drilling Mud Polymer

Description

Ultra High Grade, Anionic, Acrylamide Copolymer in the form of a free flowing coarse white powder.

Principal Use

The Number One choice for demanding hole conditions when Bentonite is unavailable or unwanted. A one product drilling fluid. Excellent for winter. Product does not freeze in container. Economical. Ultra High Grade means less product required on jobs and less product to fly into remote sites. Lifts cuttings and stabilizes the hole. Reduces torque and drag in the hole. Greatly reduces swelling of clays and shales. Can be used to make stiff foam for air drilling. Environmentally friendly. Extremely effective.

Mixing

Add a small amount of Extreme Number One to water in the mixing tank. Sprinkle slowly into turbulent water when mixer is on high. Increase the quantity added of Extreme Number One if hole conditions are difficult. For fast mixing, add Extreme Number One to a small amount of vegetable oil first and then pour quickly into turbulent water.

Packaging

Extreme Number One comes in 5 gallon, high impact plastic pails with a snap-on lid. 24 pails per pallet.

MATERIAL SAFETY DATA SHEET

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Tel: **604-535-6699** Fax: 604-535-5493 *e-mail: extreme.ron@telus.net*

EXTREME ROD GREASE

EMERGENCY PHONE NO. (604) 535-6699

WHMIS HAZARD INDEX:

DEGREE OF HAZARD:		**HAZARD RATING:**	
HEALTH	0	0	LEAST
FIRE	1	1	SLIGHT
REACTIVITY	0	2	MODERATE
OTHER:	A (GLASSES & GLOVES)	3	HIGH
		4	EXTREME

SECTION 1 PRODUCT IDENTIFICATION

PRODUCT NAME:	EXTREME ROD GREASE
CHEMICAL IDENTIFICATION:	Petroleum Hydrocarbon
MATERIAL USE:	Thick composition, industrial lubricant
WHMIS CLASSIFICATION:	Not controlled
WORK PLACE HAZARD:	Not applicable

TRANSPORTATION OF DANGEROUS GOODS (TDGR)

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

SECTION 2 HAZARDOUS INGREDIENTS

INGREDIENT:	Mixture of hydrotreated neutral base oil and additives
PERCENTAGE:	100%
CAS NUMBER:	Not applicable
LD (50):	Acute oral toxicity (Rat): 5000 Mg/Kg
LC (50):	Not determined
TLV-TWA:	5 Mg/m^3 (Oil Mist)

EXTREME ROD GREASE

MATERIAL SAFETY DATA SHEET

SECTION 3 PHYSICAL DATA

APPEARANCE AND ODOUR:	Long fibered grease, greenish brown colour, mild grease like odour.
DENSITY (SPECIFIC GRAVITY):	.89
BOILING POINT:	260°C
MELTING POINT:	Not available
SOLUBILITY:	Insoluble in cold water, soluble in non-polar hydrocarbon solvents.
EVAPORATION RATE: (EE=1):	Not available
VAPOUR PRESSURE: (MM HG):	0.0075 @ 20°C
VAPOUR DENSITY: (AIR = 1):	Not available

SECTION 4 FIRE AND EXPLOSION

FLASHPOINT:	252°C
FLAMMABLE LIMIT:	Not available
AUTO IGNITION TEMP:	316°C
EXTINGUISHING MEDIA:	Dry chemical, foam, CO_2, water spray, fog
SPECIAL FIRE FIGHTING PROCEDURES:	None required
UNUSUAL FIRE AND EXPLOSION HAZARDS:	None

SECTION 5 REACTIVITY DATA

STABILITY (THERMAL, LIGHT, ETC.):	Stable
INCOMPATIBILITY (CONDITIONS TO AVOID):	Avoid excessive heat, highly reactive with oxidizing agents.
HAZARDOUS POLYMERIZATION:	Will not occur
HAZARDOUS DECOMPOSITION PRODUCTS:	Oxides of carbon and nitrogen, irritating fumes and smoke as products of incomplete combustion.

EXTREME ROD GREASE

MATERIAL SAFETY DATA SHEET

SECTION 6 HEALTH HAZARDS

ROUTE OF ENTRY:
(X) SKIN (X) EYE CONTACT (X) INHALATION (X) INGESTION

SKIN CONTACT:	Non-irritating; for prolonged exposure wear gloves.
EYE CONTACT:	May irritate the eyes
INHALATION:	Low vapour pressure, not expected to present inhalation exposure under normal conditions.
INGESTION:	Low toxicity on ingestion; has laxative effect and rapidly eliminated.

SECTION 7 PREVENTATIVE MEASURES

SKIN PROTECTION:	None normally required. Personal preference suggest gloves, boots and long sleeved clothing.
EYE PROTECTION:	Wear safety glasses/goggles.
VENTILATION:	No special ventilation required for normal conditions.
RESPIRATORY PROTECTION:	None normally required. If mist generated by heating or spraying wear an organic vapour respirator with mist filter.
LEAK & SPILL PROCEDURE:	Contain spill. Use appropriate tools to place spilled material in a container for reclaiming or disposal.
WASTE DISPOSAL:	Dispose of in compliance with local and government regulations.
STORAGE REQUIREMENTS:	Store in cool, dry area away from oxidizing agents. Keep containers tightly closed when not in use.

EXTREME ROD GREASE

MATERIAL SAFETY DATA SHEET

SECTION 8	**FIRST AID MEASURES**
SKIN:	Wash gently and thoroughly with mild soap and water. Remove and launder contaminated clothes.
EYE:	Immediately flush eyes with running water for at least 15 minutes. Keep eyelids open. Do not use an eye ointment. Seek medical attention if irritation persists.
INHALATION:	Not expected under normal conditions. Remove victim to safe area, perform mouth to mouth resuscitation if victim is not breathing. Seek medical attention.
INGESTION:	Do not induce vomiting. Has laxative effect; rapidly eliminated. Medical assessment advised.

SECTION 9	**PREPARATION 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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Tel: **604-535-6699** Fax: 604-535-5493 *e-mail: extreme.ron@telus.net*

EXTREME SUPER TROL

EMERGENCY PHONE NO. (604) 535-6699

WHMIS HAZARD INDEX:

DEGREE OF HAZARD:		**HAZARD RATING:**	
HEALTH	0	0	LEAST
FIRE	0	1	SLIGHT
REACTIVITY	0	2	MODERATE
OTHER:	B (GLASSES & GLOVES)	3	HIGH
		4	EXTREME

SECTION 1 PRODUCT IDENTIFICATION

PRODUCT NAME:	EXTREME SUPER TROL
CHEMICAL IDENTIFICATION:	Semi Synthetic Cellulose
MATERIAL USE:	Drilling Fluid Additive
WHMIS CLASSIFICATION:	Not Regulated
WORK PLACE HAZARD:	Not Regulated

TRANSPORTATION OF DANGEROUS GOODS (TDGR)

CLASSIFICATION:	Not Dangerous Goods
PACKAGE GROUP:	Not Applicable
CAS NUMBER:	Not Applicable
MSDS CODE:	Not Applicable

SECTION 2 HAZARDOUS INGREDIENTS

INGREDIENT:	No Hazardous Ingredients
PERCENTAGE:	N/A
CAS NUMBER:	N/A
LD (50):	
LC (50):	

EXTREME SUPER TROL

MATERIAL SAFETY DATA SHEET

SECTION 3 PHYSICAL DATA

APPEARANCE AND ODOUR:	Free flowing white powder. No appreciable odour.
DENSITY (SPECIFIC GRAVITY):	1.55
BOILING POINT:	N/A
MELTING POINT:	N/A
SOLUBILITY:	Soluble
EVAPORATION RATE: (EE=1):	N/A
VAPOUR PRESSURE: (MM HG):	N/A
VAPOUR DENSITY: (AIR = 1):	N/A

SECTION 4 FIRE AND EXPLOSION

FLASHPOINT:	> 350°C
FLAMMABLE LIMIT:	Not determined
AUTO IGNITION TEMP:	No data
EXTINGUISHING MEDIA:	Water, water fog, foam, dry chemical, CO_2
SPECIAL FIRE FIGHTING PROCEDURES:	No special requirements
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Becomes very slippery when contacted with water.

SECTION 5 REACTIVITY DATA

STABILITY (THERMAL, LIGHT, ETC.):	Stable
INCOMPATIBILITY (CONDITIONS TO AVOID):	Strong oxidizing agents and caustic solutions.
HAZARDOUS POLYMERIZATION:	Will not occur
HAZARDOUS DECOMPOSITION PRODUCTS:	Oxides of carbon

EXTREME SUPER TROL

MATERIAL SAFETY DATA SHEET

SECTION 6 HEALTH HAZARDS

ROUTE OF ENTRY:
( ) SKIN (X) EYE CONTACT (X) INHALATION (X) INGESTION

SKIN CONTACT:	Generally not irritating
EYE CONTACT:	Dust may produce some irritation
INHALATION:	Non irritating in low concentrations. High concentrations may cause mechanical irritation of upper respiratory tract.
INGESTION:	Generally no harmful effects. May cause gastric intestinal discomfort.

SECTION 7 PREVENTATIVE MEASURES

SKIN PROTECTION:	None normally required.
EYE PROTECTION:	Nuisance dust, use goggles.
VENTILATION:	No special requirements.
RESPIRATORY PROTECTION:	Nuisance dust, use dust mask.
LEAK & SPILL PROCEDURE:	Sweep up or vacuum if dry. If wet, pick up with earth or sand.
WASTE DISPOSAL:	Dispose of in compliance with local and government regulations.
STORAGE REQUIREMENTS:	Keep containers closed when not in use. Keep dry, material becomes slippery when wet.

EXTREME SUPER TROL

MATERIAL SAFETY DATA SHEET

SECTION 8 FIRST AID MEASURES

SKIN:	Wash with soap and water.
EYE:	Flush with water at least 15 minutes.
INHALATION:	Remove from exposure.
INGESTION:	Induce vomiting, give 2 glasses of water. If adverse symptoms develop seek medical attention.

SECTION 9 PREPARATION DATE

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

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EMERGENCY PHONE NO. (604) 535-6699

EXTREME SUPER-G BLUE

WHMIS HAZARD INDEX:

DEGREE OF HAZARD:		**HAZARD RATING:**	
HEALTH	1	0	LEAST
FIRE	2	1	SLIGHT
REACTIVITY	0	2	MODERATE
OTHER:	B (GLASSES & GLOVES)	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:	Mineral spirits	Alkyl Phenol Ethoxylate	Ethoxylated C12-15 Alcohol
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_2
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:	NOx , COx

EXTREME SUPER-G BLUE

MATERIAL SAFETY DATA SHEET

SECTION 6 HEALTH 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 7 PREVENTATIVE 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 & 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 8	**FIRST 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 9	**PREPARATION 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

WHMIS HAZARD INDEX:

DEGREE OF HAZARD:		**HAZARD RATING:**	
HEALTH	0	0	LEAST
FIRE	0	1	SLIGHT
REACTIVITY	0	2	MODERATE
OTHER:	0	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_2
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 & 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

EXTREME
PRODUCTS & DRILLING SUPPLIES INC.

Material Safety Data Sheet

WHMIS (Pictograms)	WHMIS (Classification)	Protective Clothing	TDG (pictograms)
	Not controlled		

Section 1. Chemical Product and Company Identification

Product Name EXTREME ENVIRO COTE

Synonym Not available

Manufacturer Extreme Products & Drilling Supplies Inc.
15640 Mountainview Drive
Surrey BC CANADA V3S 0C6

Material Uses Grease products are calcium sulfonate thickened greases designed for high temperature multipurpose automotive and industrial applications.

In case of Emergency Extreme Products: 604-535-6699

Poison Control Centre: Consult local telephone directory for emergency number(s).

Section 2. Composition and Information on Ingredients

			Exposure Limits (ACGIH)		
Name	CAS #	% (W/W)	TLV-TWA(8 h)	STEL	CEILING
1) Proprietary	Mixture	100	5 mg/m³ (oil mist)	10 mg/m³ (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.

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, CO2), sulphur oxides (SOx), calcium oxides (CaOx), smoke and irritating vapours as products of incomplete combustion.		
Fire Fighting Media and Instructions	NAERG96, GUIDE 171, Substances (low to moderate hazard). If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (0.5 mile) in all directions; also, consider initial evacuation for 800 meters (0.5 mile) in all directions. Shut off fuel to fire if it is possible to do so without hazard. If this is impossible, withdraw from area and let fire burn out under controlled conditions. Withdraw immediately in case of rising sound from venting safety device or any discolouration of tank due to fire. Cool containing vessels with water spray in order to prevent pressure build-up, autoignition or explosion. SMALL FIRE: use DRY chemicals, foam, water spray or CO2. LARGE FIRE: use water spray, fog or foam. For small outdoor fires, portable fire extinguishers may be used, and self contained breathing apparatus (SCBA) may not be required. For all indoor fires and any significant outdoor fires, SCBA is required. Respiratory and eye protection are required for fire fighting personnel.		

Section 6. Accidental Release Measures

Material Release or Spill	NAERG96, GUIDE 171, Substances (low to moderate hazard). ELIMINATE ALL IGNITION SOURCES. Avoid contact. Stop leak if without risk. Contain spill. Absorb with inert absorbents, dry clay, or diatomaceous earth. Avoid inhaling dust of diatomaceous earth for it may contain silica in very fine particle size, making this a potential respiratory hazard. Place used absorbent in closed metal containers for later disposal or burn absorbent in a suitable combustion chamber. DO NOT FLUSH TO SEWERS, STREAMS OR OTHER BODIES OF WATER. Check with applicable jurisdiction for specific disposal requirements of spilled material and empty containers. Notify the appropriate authorities immediately.

Section 7. Handling and Storage

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

Section 8. Exposure Controls/Personal Protection

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

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

Section 10. Stability and Reactivity

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

HMIS (U.S.A.)

Health Hazard	1
Fire Hazard	1
Reactivity	0
Personal Protection	B

NFPA (U.S.A.)

Section 11. Toxicological Information

Routes of Entry	Skin contact, eyes contact, inhalation and ingestion.
Acute Lethality	Not available.
Chronic or Other Toxic Effects	
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.
Other Considerations	No additional remark.

Section 12. Ecological Information

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

Section 13. Disposal Considerations

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

Section 14. Transport Information

TDG Classification	Not controlled under TDG (Canada).	**Special Provisions for Transport**	Not applicable.

Section 15. Regulatory Information

Other Regulations	This product is acceptable for use under the provisions of WHMIS-CPR. All components of this formulation are listed on the CEPA-DSL (Domestic Substances List). All components of this formulation are listed on the US EPA-TSCA Inventory. All components of this formulation are listed on EINECS or exempt. 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 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 – 53rd 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

INGREDIENT	% (w/w)	CAS NUMBER	LD_{50} Oral-Rat	LC_{50} Inhal-Rat	ACGIH-TLV
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 XX] UNSTABLE []
INCOMPATIBILITY (CONDITIONS TO AVOID):	Reacts violently with bromine triflouride, or a mixture of boron trioxide and calcium oxide. Sulfuric acid yields hydrogen chloride (HC1), which is corrosive, irritating, and reactive. Water reactive materials, such as sodium, cause an exothermic reaction. Methyl vinyl ether stats 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 ($C1^-$) are given off at temperatures above 1600°C.
HAZARDOUS POLYMERIZATION:	WILL NOT OCCUR [XX] MAY OCCUR []

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 Liquid

Class 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	**TELEPHONE NUMBERS**	
Shell Canada Limited	**Shell Emergency Number**	1-800-661-7378
P.O. Box 100, Station M	**CANUTEC 24 HOUR EMERGENCY NUMBER**	613-996-6666
400-4th Ave. S.W.		
Calgary, AB Canada	For general information:	1-800-661-1600
T2P 2H5	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

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

10. STABILITY AND REACTIVITY

Chemically Stable:	Yes
Hazardous Polymerization:	No
Sensitive to Mechanical Impact:	No
Sensitive to Static Discharge:	Yes
Incompatible Materials:	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)	**Toxicological Data**
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.

Irritancy:	This product is expected to be irritating to skin but is not predicted to be a skin sensitizer.
Acute Toxicity:	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.
Chronic Effects:	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 arrythmia. 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.
Pre-existing Conditions:	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.

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

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

16. ADDITIONAL INFORMATION

LABEL STATEMENTS

Hazard Statement :	Flammable Liquid. Irritating to skin.
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.
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: 2005-07-26

Class B2 Flammable Liquid

Class D2A Carcinogenicity

1. PRODUCT AND COMPANY IDENTIFICATION

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

SUPPLIER	**TELEPHONE NUMBERS**	
Shell Canada Limited (SCL)	**Shell Emergency Number**	1-800-661-7378
P.O. Box 100, Station M	**CANUTEC 24 HOUR EMERGENCY NUMBER**	613-996-6666
400-4th Ave. S.W.		
Calgary, AB Canada	For general information:	1-800-661-1600
T2P 2H5	For MSDS information:	403-691-3982
	(From 7:30 to 4:30 Mountain Time)	

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
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 arrythmia.

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

Physical State:	Volatile Liquid
Appearance:	Colourless
Odour:	Typical Gasoline Odour
Odour Threshold:	< 0.25 ppm
Freezing/Pour Point:	Not available
Boiling Point:	35 - 220 ℃
Density:	720 - 760 kg/m3 @ 15 ℃
Vapour Density (Air = 1):	3.5
Vapour Pressure (absolute):	< 107 kPa @ 38 ℃
Specific Gravity (Water = 1):	0.74
pH:	Not applicable
Flash Point:	Tag Closed Cup -30 ℃
Lower Flammable Limit:	1.4 % (vol.)
Upper Flammable Limit:	7.6 % (vol.)
Autoignition Temperature:	280 ℃
Viscosity:	< 1 cSt @ 38 ℃
Evaporation Rate (n-BuAc = 1):	Not available
Partition Coefficient (log K_{ow}):	2.3
Water Solubility:	Insoluble
Other Solvents:	Hydrocarbon Solvents
Formula:	C4 - C11

10. STABILITY AND REACTIVITY

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

11. TOXICOLOGICAL INFORMATION

Ingredient (or Product if not specified)	Toxicological Data
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

Routes of Exposure:	Exposure will most likely occur through skin contact or inhalation.
Formulation:	No data is specifically available for this product and therefore this toxicological information is based on testing completed with the ingredients.
Irritancy:	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.
Acute Toxicity:	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.
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. 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.
Carcinogenicity and Mutagenicity:	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.

Biodegradability:	Inherently biodegradable. Rapid volatilization.
Bioaccumulation:	Potential for bioaccumulation.
Partition Coefficient (log K_{ow}):	2.3

Aquatic Toxicity

Product is expected to be toxic to aquatic organisms.

Ingredient:	Toxicological Data
Gasoline	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.
Benzene	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 Liquid

Class D2B Other Toxic 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	**TELEPHONE NUMBERS**	
Shell Canada Limited	**Shell Emergency Number**	1-800-661-7378
P.O. Box 100, Station M	**CANUTEC 24 HOUR EMERGENCY NUMBER**	613-996-6666
400-4th Ave. S.W.		
Calgary, AB Canada	For general information:	1-800-661-1600
T2P 2H5	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
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/m3 (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

Physical State:	Liquid
Appearance:	Bright Clear
Odour:	Hydrocarbon Odour
Odour Threshold:	Not available
Freezing/Pour Point:	Freeze Point < -47 °C
Boiling Point:	145 - 300 °C
Density:	775 - 840 kg/m3 @ 15 °C
Vapour Density (Air = 1):	Not available
Vapour Pressure (absolute):	1 - 1.4 kPa @ 37.8 °C
pH:	Not available
Flash Point:	Tag Closed Cup > 43 °C
Lower Explosion Limit:	0.7 % (vol.)
Upper Explosion Limit:	5 % (vol.)
Autoignition Temperature:	210 °C
Viscosity:	< 8 cSt @ -20 °C
Evaporation Rate (n-BuAc = 1):	Not available
Partition Coefficient (log K_{ow}):	3.3 - 6
Water Solubility:	Insoluble
Other Solvents:	Hydrocarbon Solvents

10. STABILITY AND REACTIVITY

Chemically Stable:	Yes
Hazardous Polymerization:	No
Sensitive to Mechanical Impact:	No
Sensitive to Static Discharge:	Yes
Hazardous Decomposition Products:	Thermal decomposition products are highly dependent on combustion conditions.
Incompatible Materials:	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)	Toxicological Data
Kerosene (Petroleum), Hydrodesulfurized	LD50 Dermal Rabbit > 2000 mg/kg LD50 Oral Rat > 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_{ow}): 3.3 - 6

Aquatic Toxicity

Product is expected to be toxic to aquatic organisms.

Ingredient:	Toxicological Data
Kerosene (Petroleum), Hydrodesulfurized	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.

WHMIS Class:	Class B3 Combustible Liquid Class D2B Other Toxic Effects - Skin Irritant
DSL/NDSL Status:	This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act.
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.

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: 2002-11-06

Class B3 Combustible Liquid

Class D2B Other Toxic 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	**TELEPHONE NUMBERS**	
Shell Canada Limited	**Shell Emergency Number**	1-800-661-7378
P.O. Box 100, Station M	**CANUTEC 24 HOUR EMERGENCY NUMBER**	613-996-6666
400-4th Ave. S.W.		
Calgary, AB Canada	For general information:	1-800-661-1600
T2P 2H5	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/m3
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

Physical State:	Liquid
Appearance:	Lightly Coloured
Odour:	Hydrocarbon Odour
Odour Threshold:	Not available
Freezing/Pour Point:	Varies with region and season
Boiling Point:	150 - 330 ℃
Density:	< 881 kg/m3 @ 15 ℃
Vapour Density (Air = 1):	Not available
Vapour Pressure (absolute):	Not available
pH:	Not applicable
Flash Point:	Pensky-Martens CC > 40 ℃
Lower Explosion Limit:	1 % (vol.)
Upper Explosion Limit:	6 % (vol.)
Autoignition Temperature:	250 ℃
Viscosity:	1.7 - 3.6 cSt @ 40 ℃
Evaporation Rate (n-BuAc = 1):	Not available
Partition Coefficient (log K_{ow}):	Not available
Water Solubility:	Insoluble
Other Solvents:	Hydrocarbon Solvents
Formula:	C10 to C22 Hydrocarbons

10. STABILITY AND REACTIVITY

Chemically Stable:	Yes
Hazardous Polymerization:	No
Sensitive to Mechanical Impact:	No
Sensitive to Static Discharge:	Yes
Hazardous Decomposition Products:	Thermal decomposition products are highly dependent on combustion conditions.
Incompatible Materials:	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)	Toxicological Data
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.

Irritancy:	This product is expected to be irritating to skin but is not predicted to be a skin sensitizer.
Acute Toxicity:	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.
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. 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.

Biodegradability:	Not readily biodegradable.
Bioaccumulation:	Potential for bioaccumulation.
Partition Coefficient (log K_{OW}):	Not available

Aquatic Toxicity

May be harmful to aquatic life.

Ingredient:	Toxicological Data
Fuels, Diesel, No. 2	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.

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	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/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 :	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 1
Section 3
Section 5
Section 8
Section 9
Section 12
Section 14

MATERIAL SAFETY DATA SHEET

SECTION 1 – PRODUCT INFORMATION

Product Name:	Propane
Trade Name:	LPG (Liquefied Petroleum Gas), LP-Gas
Chemical Formula:	C_3H_8
WHMIS Classification:	Class A – Compressed Gas Class B, Division 1 – Flammable Gas

Supplier: Superior Propane
A Division of Superior Plus LP
1111 - 49th Avenue N.E.
Calgary, AB T2E 8V2
Business: (403) 730-7500

24-Hour 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_{50} (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
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 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

Method: Closed cup

Flammable Limits: Lower 2.4%, Upper 9.5%

Auto Ignition T emperature: 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

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 T o A void: 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: 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