Hazards:

Flammable Liquid.
May cause cancer.
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.
May be absorbed by skin contact. Prolonged immersion in liquid may lead to chemical burns.
Vapours are moderately irritating to the respiratory passages. The liquid when accidently aspirated into the lungs can cause a severe inflammation of the lung.
Excessive exposure to benzene may cause leukemia in man.

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! 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:

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. Do not use water except as a fog. Product will float and can be reignited on surface of water. 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:	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.

7. HANDLING AND STORAGE

Handling:	Extremely flammable. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. Avoid all direct contact with this material. Avoid prolonged or repeated inhalation of vapours. 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. Never siphon by mouth. Empty containers are hazardous, may contain flammable/explosive dusts, residues or vapours. 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. 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)
Benzene (skin) : 0.5 ppm (STEL: 2.5 ppm)
Skin Notation: The occupational exposure limit is based on the fact that skin and/or eye is a major route of exposure through absorption.

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:	Impervious gloves should be worn at all times when handling this product. PVC or nitrile rubber gloves are recommended. 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. 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:	Dyed for tax purposes
Odour:	Typical Gasoline Odour
Odour Threshold:	>0.25 ppm
Freezing/Pour Point:	Not available
Boiling Point:	35 - 220 degrees C
Density:	750 - 850 kg/m3 @ 15 degrees C
Vapour Density (Air = 1):	3.5
Vapour Pressure (absolute):	Not available
pH:	Not applicable
Flash Point:	Method Tag Closed Cup = -30 degrees C
Lower Explosion Limit:	1.4 % (vol.)
Upper Explosion Limit:	7.6 % (vol.)
Autoignition Temperature:	280 degrees C
Viscosity:	<1 cSt @ 38 degrees C
Evaporation Rate (n-BuAc = 1):	Not available
Partition Coefficient (K_{ow}):	200
Water Solubility:	Insoluble

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
Gasoline, Natural	LD50 Oral Rat = 18800 mg/kg LD50 Dermal Rabbit >8000 mg/kg
Benzene	LD50 Oral Rat = 930 - 5600 mg/kg LC50 Inhalation Rat = 13700 ppm for 4 hours

Routes of Exposure:	Exposure may occur via inhalation, ingestion, skin absorption and skin or eye contact.
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.
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.
Carcinogenicity and Mutagenicity:	This product contains benzene. 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

Environmental Effects:	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 be harmful to aquatic life. Fish Toxicity: 5 to 40 ppm | 96 hr TLm | Rainbow Trout | Freshwater
Biodegradability:	Not readily biodegradable. Potential for bioaccumulation. Rapid volatilization.

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 D2A Other Toxic Effects - Carcinogen
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. 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. Changes have been made to: Section 1 Section 2 Section 14

De Beers **Material Safety Datasheet**

CAS No
Date Issued: 19/05/2003
propane or commercial propane to BS4250 (dimethylmethane)

Company Details

Name	Site Specific	Emergency Phone Number
Address		Tel
		Fax

1.Product and Company Identification

Trade / Commercial Name	**propane or commercial propane to BS4250 (dimethylmethane)**
Chemical Name	propane or commercial propane to BS4250 (dimethylmethane)
Formula	
Chemical Family	
Synonyms	

Un No	1978	Hazchem Code	2we
ERG No	115	EAC	22

2. Composition

Hazardous Components	propane or commercial propane to BS4250 (dimethylmethane)

3. Hazards Identification

Highly flammable
Heating will cause pressure rise with risk of bursting.
May form explosive mixture with air, particularly in empty uncleaned receptacles.
Bursting aerosols can be forcibly projected from a fire

4. First Aid Measures

First Aid Skin	Thaw frosted parts with lukewarm water. Then remove & isolate contaminated clothing, including shoes. Keep victim warm and quiet. Call Emergency Medical Care.
First Aid Eyes	Flush eyes with water. Hold eyelids open while washing.
First Aid Ingested	Call Emergency Medical Care
First Aid Inhalation	Move to fresh air. If not breathing give artificial respiration. If breathing of victim is difficult administer oxygen for a maximum period of one hour.

5. Fire Fighting Measures

DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.
SMALL Fires: Dry chemical or CO2.
LARGE Fires: Water spray or fog. Move containers from fire area if you can do it without risk.
Fire involving Tanks: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
Cool containers with flooding quantities of water until well after fire is out.
Do not direct water at source of leak or safety devices; icing may occur. ALWAYS stay away from the ends of tanks.
Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
Isolate spill or leak area immediately for at least 50 to 100 metres (160 to 330 feet) in all directions.
Keep unauthorized personnel away. Stay upwind. Many gases are heavier than air and will spread along ground and
collect in low or confined areas (sewers, basements, tanks). Keep out of low areas.
Wear positive pressure self-contained breathing apparatus (SCBA).
Structural firefighters' protective clothing will only provide limited protection.
Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.
Large spill: consider initial downwind evacuation for at least 800 metres (1/2 mile).
If ROAD OR RAIL TANKER is involved in a fire, ISOLATE for 1600 metres (1 mile) in all directions; also, consider initial
evacuation for 1600 metres (1 mile) in all directions.

6. Accidental Release Measures

PRECAUTIONS:
Restrict access to area.
Provide adequate protective equipment and ventilation.
Remove sources of heat and flame.
Notify occupational and environmental authorities.
SPILL OR LEAK:
ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
All equipment used when handling the product must be grounded.
Do not touch or walk through spilled material.
Stop leak if you can do it without risk.
If possible, turn leaking containers so that gas escapes rather than liquid.
Use water spray to reduce Vapours or divert vapour cloud drift
Do not direct water at spill or source of leak.
Prevent spreading of Vapours through sewers, ventilation systems and confined areas.
Isolate area until gas has dispersed.
CAUTION: When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.

7. Handling And Storage

Fire separation of at least 5M or 4Hr fire resistant wall
from the following classes is recommended.
Flammable Liquids Flammable Solids

Dangerous When Wet Poison
Corrosives
Storage in the same room or space is prohibited with the following classes:
The rooms or spaces should be at least 10M apart.
Explosives Spontaneously Combustibles
Oxidizing Agents Organic Peroxides
Radioactive

8. Exposure Controls/Personal Protection

Occupational Exposure Limits	TWA OEL-RL SHORT TERM OEL-RL PPMa) MG/M3b) PPMa) MG/M3b)
Controls	The control measures appropriate for a particular worksite depend on how this material is used and on the extent of exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. Use a non-sparking, grounded ventilation system separate from other exhaust ventilation systems. Exhaust directly to the outside. Supply sufficient replacement air to make up for air removed. Have a safety shower/eye wash fountain readily available in the immediate work area
Personal Protection	If engineering controls and work practices are not effective in controlling this material, then wear suitable personal protection equipment, including chemical safety goggles & face shield, boots, impervious gloves, coveralls, & respiratory protection. Have appropriate equipment available for use in emergencies.

9. Physical & Chemical Properties

Colourless gas.
Boiling Point: -42.1 oC
Lower Explosive Limit = 2.1%
Upper Explosive Limit = 9.5%
Freezing Point: -187.1 oC
Density: 0.5852 @ -44.5 o
Flash Point: -104.4 oC
Auto Ignition Temperature: 450 oC
Vapour Density: 1.56
Soluble in water, alc, ether
Gas is heavier than air.
Can form explosive mixture with air.
Contact with substance can cause skin burns and severe damage to eyes.
No ignition sources.
Keep container(s) cool if involved in a fire.

10. Stability And Reactivity

Conditions to Avoid	Stable.
Incompatible Materials	None.
Other	None.

11. Toxicological Information

Vapours may cause dizziness or asphyxiation without warning.
Some may be irritating if inhaled at high concentrations.
Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.

12. Ecological Information

No ecological problems are expected when the product is handled and used with due care.

13. Disposal Considerations

Disposal Method Product	There are no uniform EC regulations for the disposal of chemicals or residues. Chemical residues generally count as special waste. The disposal of the latter is regulated in the EC member countries through corresponding laws and regulations. We recommend that you contact the authorities in charge or approved waste disposal companies which will advise you on how to dispose of special waste.
Disposal Method Packaging	Disposal in accordance with local legal provisions.

14. Transport Information

UN No	1978	Hazchem Code	2we
ERG No	115	EAC	22
IMDG Code	2070		
Marine Pollutant	False		
Class	Class: 2(2.1) Flammable Gas		
Subsidiary Risks	None		
Tremcard Number	27A/20G11		

15. Regulatory Information

EEC Hazard Classification	2(2.1)
Risk Phases	Extremely flammable liquefied gas
Safety Phases	Keep container in a well-ventilated place Keep away from sources of ignition - no smoking Take precautionary measures against static discharges
National Legislation	

16. Other Information

Reason for Alteration: General update.

The information contained herein is based on the present state of our knowledge.
It characterizes the product with regard to the appropriate safety precautions.
It does not represent a guarantee of the properness of the product.

LAST PAGE

General Chemical

Material Safety Data Sheet

CALCIUM CHLORIDE, FLAKE

A. GENERAL INFORMATION

TRADE NAME (COMMON NAME): FLAKE CALCIUM CHLORIDE		**CAS NUMBER:** 10043-52-4 (anhydrous)	
CHEMICAL NAME AND/OR SYNONYM: Calcium Chloride, Dihydrate			
FORMULA: $CaCl_2 \cdot 2H_2O$		**MOLECULAR WEIGHT:** 147.02	
MANUFACTURER/ADDRESS: GENERAL CHEMICAL CORPORATION 90 East Halsey Road Parsippany, NJ 07054			
CONTACT: Manager, Product Safety	**PHONE NUMBER:** (973) 515-1840	**LAST ISSUE DATE:** September, 1994	**CURRENT ISSUE DATE:** May, 2001

B. FIRST AID MEASURES

EMERGENCY PHONE NUMBER: (800) 631-8050

EYES:	Flush promptly with plenty of water, continuing for at least 15 minutes. Get medical attention.
SKIN:	Wash with plenty of water.
INHALATION:	Remove to fresh air.
INGESTION:	If conscious, immediately give 2 to 4 glasses of water, and induce vomiting by touching finger to back of throat.
	Get medical attention for irritation, ingestion, or discomfort from inhalation.

C. HAZARDS INFORMATION

INHALATION:
Dust or mist inhalation may irritate nose, throat, and lungs.

INGESTION:
Low in toxicity. LD_{50} (rat): 1.4 g/kg.* - Reference (e)
May irritate gastrointestinal tract. *anhydrous basis.

SKIN:
May cause skin irritation. Under conditions of prolonged contact or when moisture is present, superficial burns may result. Contact with abraded skin or cuts can cause severe necrosis.

EYES:
May irritate or burn eyes.

PERMISSIBLE CONCENTRATION: AIR (SEE SECTION J)
Also, no TLV established by ACGIH.

BIOLOGICAL
None

UNUSUAL CHRONIC TOXICITY:
None.

General Chemical

Material Safety Data Sheet

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EYES:
May irritate or burn eyes.

PERMISSIBLE CONCENTRATION: AIR (SEE SECTION J)
Also, no TLV established by ACGIH.

BIOLOGICAL
None

UNUSUAL CHRONIC TOXICITY:
None.

C. HAZARDS (Cont.)

FLASH POINT:	AUTO IGNITION TEMPERATURE	FLAMMABLE LIMITS IN AIR (% BY VOL.)
Not flammable OPEN CUP ☐ CLOSED CUP ☐	NA	LOWER - NA UPPER - NA

UNUSUAL FIRE AND EXPLOSION HAZARDS

See hazard of contact with zinc as in galvanized iron: Section G.

D. PRECAUTIONS/PROCEDURES

FIRE EXTINGUISHING AGENTS RECOMMENDED:
NA

FIRE EXTINGUISHING AGENTS TO AVOID:
NA

SPECIAL FIREFIGHTING PRECAUTIONS:
None.

VENTILATION:
Local exhaust: In packaging and uploading areas, over open processing equipment, and any other places where dusty or misty condition prevails.
Natural ventilation: Adequate for other areas.

NORMAL HANDLING:
Avoid contact with eyes, skin or clothing. Avoid breathing mist. Use good personal hygiene and housekeeping.

STORAGE:
Store in a cool, dry area. Prolonged storage may cause product to cake and become wet from atmospheric moisture.

SPILL OR LEAK (ALWAYS WEAR PERSONAL PROTECTIVE QUIPMENT – SECTION E)
Shovel up dry chemical and place in metal drum with a cover. Cautiously spray residue with plenty of water.

SPECIAL: PRECAUTIONS/PROCEDURES/LABEL INSTRUCTIONS:

SIGNAL WORD
WARNING!

E. PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION:
For dusty or misty condition, wear NIOSH-approved mist respirator.

EYES AND FACE:
For dusty or misty condition, or when handling solution where there is reasonable probability of eye contact, wear chemical safety goggles and hat. Under these conditions, do not wear contact lenses.

HANDS, ARMS, AND BODY:
As a minimum, wear long-sleeve shirt and trousers, boots, and gloves for routine product use.
Cotton gloves permitted for dry product, impervious gloves when using solutions.

OTHER CLOTHING AND EQUIPMENT:
Eye-wash facility.

C. HAZARDS (Cont.)

FLASH POINT:	AUTO IGNITION TEMPERATURE	FLAMMABLE LIMITS IN AIR (% BY VOL.)
Not flammable OPEN CUP ☐ CLOSED CUP ☐	NA	LOWER - NA UPPER - NA

UNUSUAL FIRE AND EXPLOSION HAZARDS

See hazard of contact with zinc as in galvanized iron: Section G.

D. PRECAUTIONS/PROCEDURES

FIRE EXTINGUISHING AGENTS RECOMMENDED:
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FIRE EXTINGUISHING AGENTS TO AVOID:
NA

SPECIAL FIREFIGHTING PRECAUTIONS:
None.

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HANDS, ARMS, AND BODY:
As a minimum, wear long-sleeve shirt and trousers, boots, and gloves for routine product use.
Cotton gloves permitted for dry product, impervious gloves when using solutions.

OTHER CLOTHING AND EQUIPMENT:
Eye-wash facility.

F. PHYSICAL DATA

MATERIAL IS AT NORMAL CONDITIONS:		APPEARANCE AND COLOR:
LIQUID ☐ SOLID ☒ GAS ☐ ☐ _____		Small white flakes; odorless.
BOILING POINT: Unknown °C **MELTING POINT:** 176 °C	**SPECIFIC GRAVITY:** (H_2O = 1) 0.835 - Reference (b)	**VAPOR DENSITY:** (AIR =1) NA: water vapor only.
SOLUBILITY IN WATER: (% BY WEIGHT) 42 (anhydrous) @ 20°C	**pH:** Neutral or slightly alkaline - Reference (c).	**VAPOR PRESSURE:** (mm Hg @ 20°C) ☐ (PSIG) ☐ NA
EVAPORATION RATE: (Butyl acetate=1) ☐ (Ether = 1.0) ☐ NA	**% VOLATILES BY VOLUME:** (AT 20°C) NA	

G. REACTIVITY DATA

STABILITY:	CONDITIONS TO AVOID:
UNSTABLE ☐ STABLE ☒	NA

INCOMPATIBILITY (MATERIALS TO AVOID):
Sulfuric acid: yields hydrogen chloride gas, which is corrosive, irritating, and reactive. Water-reactive materials, such as sodium: cause an exothermic reaction. Methyl vinyl ether: starts runaway polymerization reaction – Reference (d). Zinc as in galvanized iron: yields hydrogen gas with solutions, which may explode under these conditions. – Reference (d).

HAZARDOUS DECOMPOSITION PRODUCTS:

None.

HAZARDOUS POLYMERIZATION:	CONDITIONS TO AVOID:
MAY OCCUR ☐ WILL NOT OCCUR ☒	NA

H. HAZARDOUS INGREDIENTS (MIXTURES ONLY)

MATERIAL OR COMPONENT/C.A.S. #	WT.%	HAZARD DATA (See Sect. J)
NA		

F. PHYSICAL DATA

MATERIAL IS AT NORMAL CONDITIONS:	APPEARANCE AND COLOR:
LIQUID ☐ SOLID ☒ GAS ☐ ☐ _____	Small white flakes; odorless.

BOILING POINT: Unknown °C MELTING POINT: 176 °C	SPECIFIC GRAVITY: (H_2O = 1) 0.835 - Reference (b)	VAPOR DENSITY: (AIR =1) NA: water vapor only.
SOLUBILITY IN WATER: (% BY WEIGHT) 42 (anhydrous) @ 20°C	pH: Neutral or slightly alkaline - Reference (c).	VAPOR PRESSURE: (mm Hg @ 20°C) ☐ (PSIG) ☐ NA
EVAPORATION RATE: (Butyl acetate=1) ☐ (Ether = 1.0) ☐ NA	% VOLATILES BY VOLUME: (AT 20°C) NA	

G. REACTIVITY DATA

STABILITY: UNSTABLE ☐ STABLE ☒	CONDITIONS TO AVOID: NA

INCOMPATIBILITY (MATERIALS TO AVOID):
Sulfuric acid: yields hydrogen chloride gas, which is corrosive, irritating, and reactive. Water-reactive materials, such as sodium: cause an exothermic reaction. Methyl vinyl ether: starts runaway polymerization reaction – Reference (d). Zinc as in galvanized iron: yields hydrogen gas with solutions, which may explode under these conditions. – Reference (d).

HAZARDOUS DECOMPOSITION PRODUCTS:

None.

HAZARDOUS POLYMERIZATION: MAY OCCUR ☐ WILL NOT OCCUR ☒	CONDITIONS TO AVOID: NA

H. HAZARDOUS INGREDIENTS (MIXTURES ONLY)

MATERIAL OR COMPONENT/C.A.S. #	WT.%	HAZARD DATA (See Sect. J)
NA		

I. ENVIRONMENTAL

DEGRADABILITY/AQUATIC TOXICITY:	OCTANOL/WATER PARTITION COEFFICIENT NA

Aquatic Toxicity: TLm96: over 1000 ppm (anhydrous) – Reference (a).

EPA HAZARDOUS SUBSTANCE? (CLEAN WATER ACT SECT. 311) YES ☐ NO ☒ IF SO, REPORTABLE QUANTITY:	40 CFR 116-117

WASTE DISPOSAL METHODS (DISPOSER MUST COMPLY WITH FEDERAL, STATE AND LOCAL DISPOSAL OR DISCHARGE LAWS):

Treatment or disposal of waste generated by use of this product should be reviewed in terms of applicable federal, state and local laws and regulations. Users are advised to consult with appropriate regulatory agencies before discharge, treatment or disposal.

RCRA STATUS OF UNUSED MATERIAL IF DISCARDERD: Not a "hazardous waste".	HAZARDOUS WASTE NUMBER: (IF APPLICABLE) --	40 CFR 261

J. REFERENCES

PERMISSIBLE CONCENTRATIONS REFERENCES:

None.

REGULATORY STANDARDS	DOT CLASSIFICATION: Not regulated	49 CFR 173

None.

GENERAL:

(a) NIOSH, Registry of Toxic Effects of Chemical Substances, 1979, Accession No. EV 98 00 000.
(b) Weast, R.C. editor, CRC Handbook of Chemistry and Physics, 60th Edition, 1979-80, CRC Press, Inc., Boca Raton 33431.
(c) Hawley, G.N., editor, Condensed Chemical Dictionary, 9th Edition, 1977, Van Nostrand Reinhold, NYC.
(d) Brethwick, L., Handbook of Reactive Chemical Hazards, 2nd Edition, 1979, Butterworths, Boston.
(e) General Chemical Corporation tests, unpublished. (A solution of 25 g/100 ml water was used).

K. ADDITIONAL INFORMATION

None.

GC-1002

I. ENVIRONMENTAL

DEGRADABILITY/AQUATIC TOXICITY:	OCTANOL/WATER PARTITION COEFFICIENT NA

Aquatic Toxicity: TLm96: over 1000 ppm (anhydrous) – Reference (a).

EPA HAZARDOUS SUBSTANCE? (CLEAN WATER ACT SECT. 311) YES ☐ NO ☒ IF SO, REPORTABLE QUANTITY:	40 CFR 116-117

WASTE DISPOSAL METHODS (DISPOSER MUST COMPLY WITH FEDERAL, STATE AND LOCAL DISPOSAL OR DISCHARGE LAWS):

Treatment or disposal of waste generated by use of this product should be reviewed in terms of applicable federal, state and local laws and regulations. Users are advised to consult with appropriate regulatory agencies before discharge, treatment or disposal.

RCRA STATUS OF UNUSED MATERIAL IF DISCARDERD: Not a "hazardous waste".	HAZARDOUS WASTE NUMBER: (IF APPLICABLE) –	40 CFR 261

J. REFERENCES

PERMISSIBLE CONCENTRATIONS REFERENCES:

None.

REGULATORY STANDARDS	DOT CLASSIFICATION: Not regulated	49 CFR 173

None.

GENERAL:

(a) NIOSH, Registry of Toxic Effects of Chemical Substances, 1979, Accession No. EV 98 00 000.
(b) Weast, R.C. editor, CRC Handbook of Chemistry and Physics, 60th Edition, 1979-80, CRC Press, Inc., Boca Raton 33431.
(c) Hawley, G.N., editor, Condensed Chemical Dictionary, 9th Edition, 1977, Van Nostrand Reinhold, NYC.
(d) Brethwick, L., Handbook of Reactive Chemical Hazards, 2nd Edition, 1979, Butterworths, Boston.
(e) General Chemical Corporation tests, unpublished. (A solution of 25 g/100 ml water was used).

K. ADDITIONAL INFORMATION

None.

GC-1002

LINSEED SOAP

504-991
Revision Number: 3

Shell Canada Limited

Material Safety Data Sheet

Effective Date: 20000110

THIS PRODUCT IS NOT A WHMIS CONTROLLED SUBSTANCE.

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT:	LINSEED SOAP
SYNONYMS:	Lubricating Grease
PRODUCT USE:	Lubricating Grease
MSDS Number:	504-991

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:	1-800-661-1800
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 Material Safety Section of Shell Canada Limited.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS Number	% Range	WHMIS Controlled	CBI Claim No. CBI Date

THIS PRODUCT IS NOT A WHMIS CONTROLLED SUBSTANCE.

See Section 8 for Occupational Exposure Guidelines.

3. HAZARDS IDENTIFICATION

Physical Description: Semi-Solid Paste Brown Colour Slight Hydrocarbon Odour

Routes of Exposure: Exposure may occur via inhalation, ingestion, skin absorption and skin or eye contact.

Hazards:

May be slightly irritating to the eyes.

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. Obtain medical attention.
Skin	Wipe excess from skin. Wash contaminated skin with mild soap and water for 15 minutes.
Ingestion	If victim is conscious, give two glasses of water and induce vomiting. Obtain medical attention.
Inhalation	Remove victim from further exposure. Additional first aid treatment is not ordinarily required.
Notes to Physician	None identified

5. FIRE FIGHTING MEASURES

Extinguishing Media	Dry Chemical Carbon Dioxide Foam Water Fog
Firefighting Instructions	No special procedures - Avoid inhalation of smoke. Caution, spilled material is slippery. Use water to cool fire exposed containers.
Hazardous Combustion Products	None currently known.

6. ACCIDENTAL RELEASE MEASURES

Spilled material is slippery. Isolate hazard area and restrict access. Wear appropriate breathing apparatus (if applicable) and protective clothing. Stop leak only if safe to do so. Contain a land spill by diking. For large spills remove by mechanical means and place in containers. Clean area with appropriate cleaner. Dispose of recovered material as noted under Disposal Considerations. Notify appropriate environmental agency(ies).

7. HANDLING AND STORAGE

Handling:	Avoid excessive heat, formation of oil mist, breathing of vapours and mist of hot oil and prolonged or repeated contact with skin. Launder contaminated clothing prior to reuse. Properly dispose of contaminated leather articles, including shoes, that cannot be decontaminated.
Storage:	Store in a cool, dry, well ventilated area, away from heat and ignition sources.

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 (1988): North American exposure limits have not been established for the product. Consult local authorities for acceptable provincial values.

Mechanical Ventilation: Mechanical ventilation is recommended for all indoor situations to control fugitive emissions. Local ventilation is recommended if oil mist is present or if exposure limit is exceeded. Make up air should always be supplied to balance air exhausted (either generally or locally).

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.

Skin Protection: Impervious gloves (viton, nitrile, PVC, neoprene) should be worn at all times when handling this product. Impervious clothing (apron coveralls) should also be worn in confined workspaces or where the risk of skin exposure is much higher.

Respiratory Protection: Not normally required under intended conditions of use.

9. PHYSICAL DATA

Physical State:	Semi-Solid Paste
Appearance:	Brown Colour
Odour:	Slight Hydrocarbon Odour
Odour Threshold:	Not available
Freezing/Pour Point:	0 degrees C
Boiling Point:	100 degrees C
Density:	Not available
Vapour Density (Air = 1):	Not available
Vapour Pressure:	Not available
Specific Gravity (Water = 1):	1
pH:	9.5 - 11
Flash Point:	Not applicable
Lower Explosion Limit:	Not applicable
Upper Explosion Limit:	Not applicable
Autoignition Temperature:	Not applicable
Viscosity:	Not available
Evaporation Rate (n-BuAc = 1):	Not available
Partition Coefficient (K_{ow}):	Not available
Water Solubility:	Soluble
Other Solvents:	None identified

10. STABILITY AND REACTIVITY

Chemically Stable:	Yes
Hazardous Polymerization:	No
Sensitive to Mechanical Impact:	No
Sensitive to Static Discharge:	No
Incompatible Materials:	None identified
Conditions of Reactivity:	Avoid excessive heat, formation of vapours or mists.

11. TOXICOLOGICAL INFORMATION

Ingredient (or Product if not specified) **Toxicological Data**

LINSEED SOAP

504-89
Revision Number: 2

Routes of Exposure:	Exposure may occur via inhalation, ingestion, skin absorption and skin or eye contact.
Irritancy:	This product is not a primary skin irritant after exposure of short duration, is not a skin sensitizer and is not irritating to the eyes.
Chronic Effects:	Prolonged and repeated contact with skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis.

12. ECOLOGICAL INFORMATION

Environmental Effects	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	Not available.

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.

14. TRANSPORTATION INFORMATION

Canadian Road and Rail Shipping Classification:
This product is not regulated under the Canadian Transportation of Dangerous Goods Regulations for transport by road and rail.

15. REGULATORY INFORMATION

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

	THIS PRODUCT IS NOT A WHMIS CONTROLLED SUBSTANCE
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 standard; however, for general discharge guidance, federal installations limited to 15 mg/L for total oil and grease. Provincial criteria are likely and should be requested when notifying provincial authorities.

16. ADDITIONAL INFORMATION

LINSEED SOAP

SDA-[illegible]
Revision Number: 2

Revisions: This MSDS has been reviewed and updated.