Superior Propane Inc. MATERIAL SAFETY DATA SHEET

SECTION 1 – PRODUCT INFORMATION

Product Name: Propane
Trade Name: LPG (Liquified Petroleum Gas), LP-Gas
Chemical Formula: C_3H_8

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

Supplier: Superior Propane Inc.
1111 - 49th Avenue N.E.
Calgary, AB T2E 8V2
Business: (403) 730-7500
Local Branch Emergency Number: _____ (Non Medical)

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

SECTION 2 – HAZARDOUS INGREDIENTS

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

Occupational Exposure Limit:
Based upon animal test data, the acute toxicity of this product is expected to be inhalation: 4 hour LC50 = 280,000 ppm (Rat).
Note: Composition is typical for HD-5 Propane per The Canadian General Standard Board CGSB 3.14 National Standard of Canada. Exact composition will vary from shipment to shipment.

SECTION 3 – CHEMICAL AND PHYSICAL DATA

Form: Liquid and vapour while stored under pressure.
Boiling Point: -42°C @ 1 atm.
Freezing Point: -188°C
Evaporation Rate: Rapid (Gas at normal ambient conditions).
Vapour Pressure: 1435 kPa (maximum) @ 37.8°C
Vapour Density: 1.52 (Air = 1)
Coefficient of Water/Oil Distribution: Not available.
pH: Not available.

Solubility in water: Slight, 6.1% by volume @ 17.8°C
Specific Gravity: 0.51 (water = 1)
Appearance/Odour: Colourless liquid and vapour while stored under pressure. Colourless and odourless gas in natural state at any concentration. Commercial propane has an odourant added, ethyl mercaptan, which has an odour similar to boiling cabbage.*
Odour Threshold: 4800 ppm

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

SECTION 4 – FIRE OR EXPLOSION HAZARD

Flash Point: -103.4°C
Method: Closed cup.
Flammable Limits: Lower 2.4%, Upper 9.5%
Auto Ignition Temperature: 432°C
Products Evolved Due To Heat Or Combustion: Carbon monoxide can be produced when primary air and secondary air are deficient while combustion is taking place.
Fire and Explosive Hazards: Explosive air-vapour mixtures may form if allowed to leak to atmosphere.
Sensitivity To Impact: No.
Sensitivity To Static Discharge: Yes.

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

SECTION 5 – REACTIVITY DATA

Stability: Stable.
Conditions To Avoid: Keep separate from oxidizing agents. Gas explodes spontaneously when mixed with chloride dioxide.
Incompatibility: Remove sources of ignition and observe distance requirements for storage tanks from combustible material, drains and openings to building.

Hazardous Decomposition Products: Deficient primary and secondary air can produce carbon monoxide.
Hazardous Polymerization: Will not occur.

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SECTION 6 – TOXICOLOGICAL PROPERTIES OF MATERIAL

ROUTES OF ENTRY:

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

Ingestion: Not considered to be a hazard.
Acute Exposure: The acute toxicity of this product is expected to be inhalation: 4 hour LC50=280,000ppm (Rat).
Chronic Exposure: There are no reported effects from long term low level exposure.
Sensitization to Product: Skin–unknown, Respiratory–unknown.
Occupational Exposure Limits: American Conference of Governmental Industrial Hygienists (ACGIH) lists as a simple asphyxiant. ACGIH TLV: 1000 ppm.
Carcinogenicity, Reproductive Toxicity, Teratogenicity, Mutagenicity: No effects reported.

SECTION 7 – PREVENTIVE MEASURES

Eyes: Safety glasses, goggles or a face shield is recommended when transferring product.
Skin: Insulated gloves required if contact with liquid or liquid cooled equipment is expected. Wear gloves and long sleeves when transferring product.

Inhalation: Where concentration in air would reduce the oxygen level below 18% air or exceed occupational exposure limits in section 6, self-contained breathing apparatus is required.
Ventilation: Explosion proof ventilation equipment required in confined spaces.

SECTION 8 – EMERGENCY AND FIRST AID PROCEDURES

FIRST AID:

Eyes: Should eye contact with liquid occur, flush eyes with lukewarm water for 15 minutes. Obtain immediate medical care.
Skin: In case of "Cold Burn" from contact with liquid, immediately place affected area in lukewarm water and keep at this temperature until circulation returns. If fingers or hands are frostbitten, have the victim hold his hand next to his body such as under the armpit. Obtain immediate medical care.
Ingestion: None considered necessary.
Inhalation: Remove person to fresh air. If breathing is difficult or has stopped, administer artificial respiration. Obtain immediate medical care.

SPILL OR LEAK:

Eliminate leak of 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 regulations (CGA B149.2).

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

SECTION 10 – PREPARATION

Superior Propane Inc., Regulations & Safety Department. (403) 730-7500 Date prepared: September 1999.
Supersedes: November 1996.

Shell Canada Limited

Material Safety Data Sheet

Effective Date: 19971002
Revised on: 1999-06-11
Supersedes: None

THIS PRODUCT IS NOT A WHMIS CONTROLLED SUBSTANCE.

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT:	ROTELLA* T XLA 10W-30
SYNONYMS:	AUTOMOTIVE ENGINE OIL
PRODUCT USE:	Lubricating oil
MSDS Number:	431-404

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

TELEPHONE NUMBERS	
Shell Emergency Number	1-800-661-7378
CANUTEC 24 HOUR EMERGENCY NUMBER	613-996-6666
For general information:	403-691-3111
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: Liquid Light Brown Hydrocarbon Odour

Routes of Exposure: Exposure will most likely occur through skin contact or from inhalation of mechanically or thermally generated oil mists.

Hazards: Inhalation of oil mist or vapours from hot oil may cause irritation of the upper respiratory tract.

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 as soon as possible after first aid has been initiated and completed.
Skin	Wipe excess from skin. Wash contaminated skin with mild soap and water for 15 minutes.
Ingestion	Do not induce vomiting. Obtain medical attention immediately.
Inhalation	Remove victim from further exposure. Additional first aid treatment is not ordinarily required.
Notes to Physician	In general, lubricating oils have low oral toxicity. High pressure injection under the skin may have serious consequences and may require urgent treatment.

5. FIRE FIGHTING MEASURES

Extinguishing Media	Dry Chemical Carbon Dioxide Foam Water Fog
Firefighting Instructions	Use water to cool fire exposed containers. Water may be used to flush spills away from exposure. Water or foam may cause frothing. 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

Eliminate all ignition sources. Isolate hazard area and restrict access. Wear appropriate breathing apparatus (if applicable) and protective clothing. Stop leak only if safe to do so. Try to work upwind of spill. Dike and contain land spills; contain water spills by booming. For large spills remove by mechanical means and place in containers. Absorb residue or small spills with absorbent material and remove to non-leaking containers for disposal. 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. Use good personal hygiene.
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 (1998) : Oil mist (mineral): 5 mg/m3 (TLV/TWA) ACGIH
10 mg/m3 (TLV/STEL) ACGIH

Mechanical Ventilation: 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). To maintain levels below workplace exposure limits mechanical ventilation recommended.

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: Oil impervious gloves (nitrile, neoprene or PVC) 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: If exposure exceeds occupational exposure limits, use an appropriate NIOSH-approved respirator. Depending on airborne concentrations, use either a NIOSH-approved dust/mist respirator or a NIOSH-approved supplied-air respirator. Under conditions of high heat, use a NIOSH-approved chemical cartridge respirator with organic vapour cartridges in combination with a dust/mist pre-filter.

9. PHYSICAL DATA

Physical State:	Liquid
Appearance:	Light Brown
Odour:	Hydrocarbon Odour
Odour Threshold:	Not available
Freezing/Pour Point:	Not available
Boiling Point:	>315 degrees C
Density:	Not available
Vapour Density (Air = 1):	Not available
Vapour Pressure:	<0.1 mm Hg @ 20 degrees C
pH:	Not available
Flash Point:	*Method Cleveland Open Cup = 224 degrees C*
Lower Explosion Limit:	Not available
Upper Explosion Limit:	Not available
Autoignition Temperature:	Not available
Viscosity:	10.49 - 11.49 cSt @ 100 degrees C
Evaporation Rate (n-BuAc = 1):	Not available
Partition Coefficient (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:	No
Incompatible Materials:	Avoid strong oxidizing agents.
Conditions of Reactivity:	Avoid excessive heat, formation of vapours or mists.

11. TOXICOLOGICAL INFORMATION

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

Routes of Exposure:	Exposure will most likely occur through skin contact or from inhalation of mechanically or thermally generated oil mists.
Formulation:	No data is specifically available for this product and therefore this toxicological information is based on data available for the ingredients.
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:	Long term intensive exposure to oil mist may cause benign lung fibrosis. Prolonged or repeated contact may cause various forms of dermatitis including folliculitis and oil acne.

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 readily biodegradable.

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. Landfill absorbed material in a government approved 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:	A component of this product is in transition to the DSL. All other components are listed.
Other Regulatory Status:	Provincial criteria are likely and should be requested when notifying provincial authorities. No Canadian federal standard; however, for general discharge guidance, federal installations limited to 15 mg/L for total oil and grease.

16. ADDITIONAL INFORMATION

Revisions: This MSDS has been reissued in the ANSI Z400.1 standard format.

MATERIAL SAFETY DATA SHEET

MSDS NUMBER: 101-200

SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME: SHELL AVGAS 100 L L

MANUFACTURER/SUPPLIER'S NAME: SHELL CANADA LIMITED
ADDRESS: P.O. Box 100, Station M
400 - 4th AVE. S.W.
Calgary, Alberta
Canada
T2P 2H5 PHONE: 403-691-3111

SHELL EMERGENCY TELEPHONE NUMBER
BUSINESS HOURS : (403)- 691-2220
AT ALL OTHER TIMES : 1-800- 661-7378

CANUTEC
24 HOUR EMERGENCY TELEPHONE
(613) 996-6666

CHEMICAL SYNONYMS
AVIATION GASOLINE

PRODUCT USE
Fuel

WHMIS CLASS AND DESCRIPTION
Class B2 Flammable Liquid
Class D2A Other Toxic Effects - Carcinogen

CANADIAN TDG DESCRIPTION (ROAD & RAIL)
SHIPPING NAME: Gasoline
CLASS DESCRIPTION: PACKING GROUP:
Class 3 Flammable Liquid II

UN NUMBER: 1203

SECTION 2 CONTROLLED INGREDIENTS & TOXICOLOGICAL PROPERTIES

LEGEND: CBI - CONFIDENTIAL BUSINESS INFORMATION

2A - PRODUCT & CONTROLLED INGREDIENTS

PRODUCT: SHELL AVGAS 100 L L 100% VOL
CAS# : 8006-61-9 WHMIS CONTROLLED: YES
Rat Oral LD50 > 8000.0 mg/kg
Dermal LD50 > 2000.0 mg/kg

BENZENE .1 - 1.0 % VOL
CAS# : 71-43-2 WHMIS CONTROLLED: YES
Rat Oral LD50 930.0 - 5600.0 mg/kg
Inhal. LC50 13700.0 ppm 4.00 hrs

2B - TOXICOLOGICAL INFORMATION

RATIONALE FOR WHMIS TOXICITY CLASSIFICATION
Exposure may occur via inhalation, ingestion, skin absorption and skin or eye contact.
According to the International Agency for Research on Cancer (IARC) this product is considered to be possibly carcinogenic to humans.
This product contains benzene. 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. Peripheral neurotoxicity has been reported in connection with over exposure to n-hexane. Methyl ethyl ketone has been reported to potentiate the neurotoxic effects caused by either n-hexane or methyl-n-butyl ketone. Methyl ethyl ketone by itself does not cause a peripheral neuropathy. MEK may also potentiate the liver and kidney toxicity of haloalkane solvents.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.
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.
Toxicity tests for mutagenicity and teratogenicity have been negative.
Data is insufficient to further classify according to WHMIS criteria. See supplemental health information.

SUPPLEMENTAL HEALTH INFORMATION
Prolonged and repeated contact with skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis. Prolonged immersion in liquid may lead to chemical burns. Vapours are moderately irritating to the eyes and respiratory passages. Prolonged exposure to high vapour concentration can cause headache, dizziness, nausea, blurred vision and central nervous system depression. The liquid when accidently aspirated into the lungs can cause a severe inflammation of the lung. Preexisting eye, skin and respiratory disorders may be aggravated by exposure to this product. Solvent abusers exposed to high doses of aromatic solvents (e.g. toluene/xylene) show signs of hearing loss as well as damage to the brain, liver and kidney. Excessive exposure during pregnancy may be hazardous to the developing fetus. In rare cases may sensitize heart muscle causing heart arrythmia.

SECTION 3 EMERGENCY AND FIRST AID PROCEDURES

EYES
Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.
INHALATION
Remove victim from further exposure and restore breathing, if required. 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.

SKIN
Wash contaminated skin with mild soap and water for 15 minutes. If irritation occurs and persists, 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.

SECTION 4 PERSONAL PROTECTIVE EQUIPMENT

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 - VALID 1997/1998
Gasoline: 300 ppm, 890 mg/m3 (TLV/TWA) ACGIH
500 ppm,1480 mg/m3 (TLV/STEL) ACGIH
Benzene (skin) : 0.5 ppm, 1.6 mg/m3 (TLV/TWA) ACGIH

EYES AND FACE
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 (HANDS, ARMS AND BODY)
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. Impervious gloves (viton, polyvinyl alcohol) should be worn at all times when handling this product.

RESPIRATORY
If exposure exceeds occupational exposure limits, wear a NIOSH- approved respirator. Use either an atmosphere-supplying respirator or an air-purifying respirator for organic vapours. Proper equipment for high concentrations includes an atmosphere supplied, positive pressure demand, self-contained or airline breathing apparatus.

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.
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.
Make up air should always be supplied to balance air exhausted (either generally or locally).

SECTION 5 PREVENTATIVE MEASURES

STORAGE AND HANDLING

Avoid excessive heat, sparks, open flames and all other sources of ignition. Use explosion-proof ventilation to prevent vapour accumulation. 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. Keep container tightly closed. Never siphon by mouth. Do not use as a cleaning solvent. 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. Extremely flammable.

SPILL AND LEAK HANDLING PROCEDURES

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. Saturated clothing should be immediately removed to avoid flammability hazard. 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 Spill area must be cleaned and restored to original condition or to the satisfaction of authorities. Dispose of recovered material as noted below. Explosion and fire is the most immediate problem. Notify appropriate environmental agency(ies).

WASTE DISPOSAL METHODS

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.

SECTION 6 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE

Liquid

ODOUR AND APPEARANCE

Typical Gasoline Odour Blue Colour Clear

AVERAGE ODOUR THRESHOLD	:	NOT AVAILABLE
BOILING POINT (DEG C)	:	75 - 170
FREEZING POINT (DEG C)	:	< -60
DENSITY (KG/M3 @ DEG C)	:	NOT AVAILABLE
VAPOUR DENSITY (AIR=1)	:	NOT AVAILABLE
VAPOUR PRESSURE (MMHG @ DEG C)	:	> 285.0 @ 38
SPECIFIC GRAVITY (H2O=1)	:	NOT AVAILABLE
PH LEVEL	:	NOT AVAILABLE
VISCOSITY (CST @ DEG C)	:	NOT AVAILABLE

EVAPORATION RATE (NBUAC=1)	:	NOT AVAILABLE
PARTITION COEFFICIENT (KOW)	:	NOT AVAILABLE
WATER SOLUBILITY	:	Insoluble
OTHER SOLVENT	:	Hydrocarbon Solvents
MOLECULAR WEIGHT (G)	:	NOT AVAILABLE
FORMULA	:	COMPLEX MIXTURE

SECTION 7 REACTIVITY, FIRE AND EXPLOSION HAZARD

7A - FIRE AND EXPLOSION HAZARD

FLASH POINT (DEG C) AND METHOD:
< 1 Tag Closed Cup

FLAMMABLE LIMITS / % VOLUME IN AIR
LFL: 1.4 UFL: 7.6
AUTOIGNITION TEMP. (DEG C):
Not Available

EXTINGUISHING MEDIA
Dry Chemical
Carbon Dioxide
Foam
Water Fog

SPECIAL FIRE-FIGHTING PROCEDURES
Extremely flammable. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus. Flashback may occur along vapour trail. Do not use water except as a fog. Use water to cool fire exposed containers. 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. Always stay away from ends of containers due to explosive potential. Fight fire from maximum distance.

7B - REACTIVITY DATA

HAZARDOUS COMBUSTION / DECOMPOSITION PRODUCTS
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.
Carbon dioxide, carbon monoxide and unidentified organic compounds may be formed upon combustion.

INCOMPATIBILITY
Strong oxidizing agents.

CONDITIONS OF REACTIVITY/INSTABILITY
Avoid excessive heat, open flames and all ignition sources.

STABLE	:	YES	SENSITIVITY TO MECHANICAL IMPACT	:	NO
HAZARDOUS POLYMERIZATION:		NO	SENSITIVITY TO STATIC DISCHARGE	:	YES

SECTION 8 ENVIRONMENTAL DATA

REGULATIONS AND STANDARDS
No Canadian federal standards. This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act.

ENVIRONMENTAL EFFECTS AND HAZARDS
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 available. Rapid volatilization.

SECTION 9 LABEL INFORMATION

TRADE NAME: SHELL AVGAS 100 L L

WHMIS DESCRIPTION
Class B2 Flammable Liquid
Class D2A Other Toxic Effects - Carcinogen

HAZARD STATEMENTS
Flammable Liquid. May cause cancer.

SAFE 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.

FIRST AID
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.

SECTION 10 PREPARATION AND SUPPLEMENTAL INFORMATION

10A - PREPARATION INFORMATION

PREPARED BY: TOXICOLOGY AND MATERIAL SAFETY SECTION OF SHELL CANADA LIMITED
MSDS EFFECTIVE DATE: 1997/10/03 SUPERCEDES MSDS DATED: 1994/11/15

10B - SUPPLEMENTAL INFORMATION

REVISIONS
- Section 2
- Section 4
- Section 5
- Section 7
- Occupational Exposure Limits for this product have changed.

REF.011997100399

MATERIAL SAFETY DATA SHEET

MSDS NUMBER: 141-012

SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME: SHELL JET B

MANUFACTURER/SUPPLIER'S NAME: SHELL CANADA LIMITED
ADDRESS: P.O. Box 100, Station M
400 - 4th AVE. S.W.
Calgary, Alberta
Canada
T2P 2H5 PHONE: 403-691-3111

SHELL EMERGENCY TELEPHONE NUMBER
BUSINESS HOURS : (403)- 691-2220
AT ALL OTHER TIMES : 1-800- 661-7378

CANUTEC
24 HOUR EMERGENCY TELEPHONE
(613) 996-6666

CHEMICAL SYNONYMS
WIDE BOILING RANGE AVIATION TURBINE FUEL

PRODUCT USE
Fuel

WHMIS CLASS AND DESCRIPTION
Class B2 Flammable Liquid
Class D2B Other Toxic Effects - Skin Irritant

CANADIAN TDG DESCRIPTION (ROAD & RAIL)
SHIPPING NAME: FUEL, AVIATION, TURBINE ENGINE

CLASS DESCRIPTION:		PACKING GROUP:
Class 3	Flammable Liquid	II

UN NUMBER: 1863

SECTION 2 CONTROLLED INGREDIENTS & TOXICOLOGICAL PROPERTIES

LEGEND: CBI - CONFIDENTIAL BUSINESS INFORMATION

2A - PRODUCT & CONTROLLED INGREDIENTS

PRODUCT: SHELL JET B 100% VOL
CAS# : 8008-20-6 WHMIS CONTROLLED: YES

Rat	Oral	LD50	>	5000.0 mg/kg
Rabbit	Dermal	LD50	>	2000.0 mg/kg

2B - TOXICOLOGICAL INFORMATION

RATIONALE FOR WHMIS TOXICITY CLASSIFICATION
Exposure may occur via inhalation, ingestion, skin absorption and skin or eye contact.
The International Agency for Research on Cancer (IARC) considers that data is insufficient in order to classify as to the carcinogenicity of the product. Studies on similar products are currently underway to assess dermal carcinogenicity.
This product is expected to be irritating to skin but is not predicted to be a skin sensitizer.
Data is insufficient to further classify according to WHMIS criteria. See supplemental health information.

SUPPLEMENTAL HEALTH INFORMATION
Prolonged and repeated contact with skin can cause defatting and drying of the skin resulting in skin irritation and dermatitis. Vapours are moderately irritating to the eyes and respiratory passages. Prolonged exposure to high vapour concentration can cause headache, dizziness, nausea, blurred vision and central nervous system depression. The liquid when accidently aspirated into the lungs can cause a severe inflammation of the lung. Preexisting eye, skin and respiratory disorders may be aggravated by exposure to this product.

SECTION 3 EMERGENCY AND FIRST AID PROCEDURES

EYES
Flush eyes with water for at least 15 minutes while holding eyelids open. If irritation occurs and persists, obtain medical attention.
INHALATION
Remove victim from further exposure and restore breathing, if required. 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.
SKIN
Wash contaminated skin with mild soap and water for 15 minutes. If irritation occurs and persists, 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.

SECTION 4 PERSONAL PROTECTIVE EQUIPMENT

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 - VALID 1997/1998
North American exposure limits have not been established for the product. Consult local authorities for acceptable provincial values.
Oil mist (mineral):5 mg/m3 (TLV/TWA) ACGIH
10 mg/m3 (TLV/STEL) ACGIH
Recommend SHELL guideline of 125 mg/m3 for vapours (8 hour shift).

EYES AND FACE
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 (HANDS, ARMS AND BODY)
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
If exposure exceeds occupational exposure limits, wear a NIOSH- approved respirator. Use either an atmosphere-supplying respirator or an air-purifying respirator for organic vapours. Proper equipment for high concentrations includes an atmosphere supplied, positive pressure demand, self-contained or airline breathing apparatus.

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.
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.
Make up air should always be supplied to balance air exhausted (either generally or locally).

SECTION 5 PREVENTATIVE MEASURES

STORAGE AND HANDLING
Avoid excessive heat, sparks, open flames and all other sources of ignition. Use explosion-proof ventilation to prevent vapour accumulation. 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. Keep container tightly closed. Never siphon by mouth. 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. Extremely flammable.

SPILL AND LEAK HANDLING PROCEDURES
Issue warning "Flammable". Eliminate all ignition sources. Handling equipment must be grounded. Isolate hazard area and restrict access. Try to work upwind of spill. Avoid direct contact with material. Saturated clothing should be immediately removed to avoid flammability hazard. 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. For large spills remove by mechanical means and place in containers. 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 below. Notify appropriate environmental agency(ies).

WASTE DISPOSAL METHODS
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.

SECTION 6 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE
Liquid
ODOUR AND APPEARANCE
Typical Gasoline Odour Bright Clear

AVERAGE ODOUR THRESHOLD	:	NOT AVAILABLE
BOILING POINT (DEG C)	:	60 - 260
FREEZING POINT (DEG C)	:	< -51
DENSITY (KG/M3 @ DEG C)	:	750.00 - 801.00 @ 15
VAPOUR DENSITY (AIR=1)	:	NOT AVAILABLE
VAPOUR PRESSURE (MMHG @ DEG C)	:	> 21.0 @ 0
SPECIFIC GRAVITY (H2O=1)	:	NOT AVAILABLE
PH LEVEL	:	NOT AVAILABLE
VISCOSITY (CST @ DEG C)	:	NOT AVAILABLE
EVAPORATION RATE (NBUAC=1)	:	NOT AVAILABLE
PARTITION COEFFICIENT (KOW)	:	NOT AVAILABLE
WATER SOLUBILITY	:	Insoluble
OTHER SOLVENT	:	Hydrocarbon Solvents
MOLECULAR WEIGHT (G)	:	NOT AVAILABLE
FORMULA	:	MIXTURE C4-C16 HYDROCARBONS

SECTION 7 REACTIVITY, FIRE AND EXPLOSION HAZARD

7A - FIRE AND EXPLOSION HAZARD

FLASH POINT (DEG C) AND METHOD:
< 1 Tag Closed Cup

FLAMMABLE LIMITS / % VOLUME IN AIR
LFL: 1.4 UFL: 7.6
AUTOIGNITION TEMP. (DEG C):
Not Available

EXTINGUISHING MEDIA
Dry Chemical
Carbon Dioxide
Foam
Water Fog

SPECIAL FIRE-FIGHTING PROCEDURES
Extremely flammable. Do not enter confined fire space without adequate protective clothing and an approved positive pressure self-contained breathing apparatus. Flashback may occur along vapour trail. Do not use water except as a fog. Use water to cool fire exposed containers. 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. Always stay away from ends of containers due to explosive potential. Fight fire from maximum distance.

7B - REACTIVITY DATA

HAZARDOUS COMBUSTION / DECOMPOSITION PRODUCTS
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.
Thermal decomposition products are highly dependent on combustion conditions. 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.

INCOMPATIBILITY
Avoid contact with strong oxidizing agents and acids.

CONDITIONS OF REACTIVITY/INSTABILITY
Avoid excessive heat, open flames and all ignition sources.

STABLE :	YES	SENSITIVITY TO MECHANICAL IMPACT :	NO
HAZARDOUS POLYMERIZATION:	NO	SENSITIVITY TO STATIC DISCHARGE :	YES

SECTION 8 ENVIRONMENTAL DATA

REGULATIONS AND STANDARDS
No Canadian federal standards. This product, or all components, are listed on the Domestic Substances List, as required under the Canadian Environmental Protection Act.

ENVIRONMENTAL EFFECTS AND HAZARDS
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. May cause physical fouling of aquatic organisms.

BIODEGRADABILITY
Not readily biodegradable. Potential for bioaccumulation.

SECTION 9 LABEL INFORMATION

TRADE NAME: SHELL JET B

WHMIS DESCRIPTION
Class B2 Flammable Liquid
Class D2B Other Toxic Effects - Skin Irritant

HAZARD STATEMENTS
Flammable Liquid. Irritating to skin.

SAFE 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.

FIRST AID
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.

SECTION 10 PREPARATION AND SUPPLEMENTAL INFORMATION

10A - PREPARATION INFORMATION

PREPARED BY: TOXICOLOGY AND MATERIAL SAFETY SECTION OF SHELL CANADA LIMITED

MSDS EFFECTIVE DATE: 1997/09/22 SUPERCEDES MSDS DATED: 1994/11/15

10B - SUPPLEMENTAL INFORMATION

REVISIONS
- Section 5
- Section 6
- Section 7

REF.011997092299

Shell Canada Limited

Material Safety Data Sheet

Effective Date: 19980901

Class B3 Combustible Liquid

Class D2B Other Toxic Effects - Skin Irritant

1. PRODUCT AND COMPANY IDENTIFICATION

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

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

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

This MSDS was prepared by the Toxicology and Material Safety Section of Shell Canada Limited.

*A star in the product name designates a trade-mark(s) of Shell Canada Limited. Used under license by Shell Canada Products Limited.

2. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS Number	% Range	WHMIS Controlled	CBI Claim No. CBI Date
Fuels, Diesel, No. 2	68476-34-6	60 - 100	Yes	

See Section 8 for Occupational Exposure Guidelines.

3. HAZARDS IDENTIFICATION

Physical Description: Liquid Lightly Coloured Hydrocarbon Odour

Routes of Exposure:	Exposure may occur via inhalation, ingestion, skin absorption and skin or eye contact.
Hazards:	Combustible Liquid. Irritating to skin. Vapours are moderately irritating to the eyes. Vapours are moderately irritating to the respiratory passages. The liquid when accidently aspirated into the lungs can cause a severe inflammation of the lung.
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	Flush affected skin with gently flowing lukewarm water for at least 20 minutes and remove contaminated clothing while rinsing. 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	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. Caution - Combustible. 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:	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. Never siphon by mouth. 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:	Use explosion-proof ventilation to prevent vapour accumulation. 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.