Poly-L ill Drilling Systems
1824 - 104 Avenue, S.W.
Calgary, Alberta, Canada
T2W-OA8
(403) 259-5112 FAX (403) 255-7185

MATERIAL SAFETY DATA SHEET/FICHE SIGNALETIQUE

Section 1—PRODUCT IDENTIFICATION

PRODUCT TRADE NAME(S): Poly Drill 133X/1330

PRODUCT DESCRIPTION: Latex polyelectrolyte

SECTION 2—COMPOSITION

A liquid polymer: Evaluation of the ingredient(s) has found no ingredient(s) hazardous as per WHMIS regulations.

SECTION 3—PHYSICAL DATA

Boiling Point: Not available
Solubility in Water: Solubility limited by solution viscosity.
Density (g/ml): 1.08 at 25° C
Appearance and Odor: Blue. Odor slight.

Specific Gravity (@ 25 Deg.C.): 1.09
pH: 8.1 (1.0% solution)
Physical State: Liquid

SECTION 4--FIRE AND EXPLOSION DATA

Flash Point (method used): (PMCC) >100 C
Conditions of flammability: Intense heat, open flame.
Hazardous combustion products: Products of incomplete hydrocarbon combustion.
Upper and Lower flammable limits: Not available
Extinguishing media: Use water spray, foam, dry chemical, or carbon dioxide.

SECTION 5—REACTIVITY

Chemical stability: Stable under normal conditions.
Hazardous Polymerization: Will not occur
Incompatible substances: Avoid strong oxidizing and reducing agents.
Hazardous decomposition products: Carbon monoxide, carbon dioxide, and products of incomplete hydrocarbon combustion.

SECTION 6—HEALTH HAZARD DATA

TOXICITY RATING: Practically non-harmful.
Routes of Exposure and Effects:
SKIN: Slight irritant: prolonged contact may cause skin irritation or dermatitis in some individuals
EYE: No effects of exposure expected with the exception of possible irritation.
INHALATION: If misted, no effects of exposure are expected.
Exposure limits: TLV-TWA: Mineral oil, mist 5 mg/m3
Carcinogenicity: None of the components of this product are listed as carcinogens by IARC and ACGIH
Sensitization of product: Not suspected to be a sensitizer.
Teratongenicity: Not available.
Mutagenicity: Not available.

Blend 03/04/00
EC
DSD
Nrb

SECTION 7—EMERGENCY AND FIRST AID PROCEDURES

SKIN: Wash exposed area with soap and water. If irritation or abnormalities persist, call a physician.
EYE: Immediately flush eyes with water for 15 minutes, if irritation or abnormalities persist, call a physician.
INHALATION: Remove to fresh air. If breathing becomes difficult, give oxygen and call a physician.
INGESTION: Don not induce vomiting: Call a physician immediately.

SECTION 8—HANDLING AND USE PRECTIONS

Storage requirements: keep container closed when no in use. Store in a cool dry location away from oxidizing and reducing agents.
Waste Disposal: product should be disposed of in accordance with applicable local, Provincial and Federal regulations.
Steps must be taken if product is released or spilled: clean spill areas thoroughly to avoid hazardous slippery conditions.

SECTION 9—INDUSTRIAL HYGIENE CONTROL MEASURES

Respiratory Protection: None normally required.
Ventilation: If mist and/or vapors are present, use air purifying respirator of self-contained breathing apparatus, but this is rarely required.
Eye Protection: Safety glasses, if personally preferred
Gloves: Generally not necessary. Personal preference.

SECTION 10—TOXICOLOGICAL PROPERTIES

Environmental Effects: Not known to be harmful to aquatic life at low concentrations.
Freshwater aquatic toxicity rating: 96 hour LC50 Rainbow Trout = 160 mg/L
96 hour LC50 Salmon = 160 mg/L

SECTION 11—DEPARTMENT OF TRANSPORTATION INFORMATION

Shipping Name: Drilling Mud
Hazard Class: Not hazardous
Hazardous Substances: None
Cautionary Labeling: None required

Poly-Drill Drilling Systems
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T2W-OA8
(403) 259-5112 FAX (403) 255-7185

MATERIAL SAFETY DATA SHEET/FICHE SIGNALETIQUE

Section 1—PRODUCT IDENTIFICATION

PRODUCT TRADE NAME(S): Poly Drill O.B.X.
TDG Classification: Non dangerous goods

WHMIS CLASSIFICATION: Non-regulated

SECTION 2—COMPOSITION

A liquid polymer: Evaluation of the ingredient(s) has found no ingredient(s) hazardous as per WHMIS regulations.

SECTION 3—PHYSICAL DATA

Boiling Point: Not available
Solubility in Water: disperses in water(forms viscous, slippery solution).
Density (g/ml): Not available
Appearance and Odor: Brown. Odor slight.

Specific Gravity: 0.9 g/cm
pH: 3.8 (1% concentration)
Physical State: Liquid

SECTION 4–FIRE AND EXPLOSION DATA

Flash Point (method used): (PMCC) greater than 100 C.
Conditions of flammability: Very low risk.
Hazardous combustion products: None known.
Upper and Lower flammable limits: Not available.
Extinguishing media: Carbon dioxide, dry chemicals, foam, in preference to water spray

SECTION 5—REACTIVITY

Chemical stability: Stable under normal conditions.
Hazardous Polymerization: Will not occur.
Incompatible substances: Avoid strong oxidants such as liquid chlorine, concentrated oxygen, sodium or calcium hypochloride.
Hazardous decomposition products: None known

SECTION 6—HEALTH HAZARD DATA

TOXICITY RATING: Practically non-harmful.
Routes of Exposure and Effects:
SKIN: Slight irritant: prolonged contact may cause skin irritation or dermatitis in some individuals
EYE: No effects of exposure expected with the exception of possible irritation.
INHALATION: Due to low volatility of mineral distillates a small inhalation hazard exists.
INGESTION: can cause nausea, vomiting, cramps, diarrhea
Chronic exposure limits: None
Sensitization of product: Not suspected to be a sensitizer.
Teratongenicity: Not available.
Mutagenicity: Not available.
Carcinogenicity: None of the components of this product are listed as carcinogens by IARC and ACGIH

SECTION 7—EMERGENCY AND FIRST AID PROCEDURES

SKIN: Wash exposed area with soap and water. If irritation or abnormalities persist, call a physician.
EYE: Immediately flush eyes with water for 15 minutes, if irritation or abnormalities persist, call a physician.
INHALATION: Remove to fresh air. If breathing becomes difficult, give oxygen and call a physician.
INGESTION: Don not induce vomiting: Call a physician immediately.

SECTION 8—HANDLING AND USE PRECTIONS

Storage requirements: keep container closed when not in use. Store in a cool dry location away from oxidizing and reducing agents.
Waste Disposal: product should be disposed of in accordance with applicable local, Provincial and Federal regulations.
Steps must be taken if product is released or spilled: clean spill areas thoroughly to avoid hazardous slippery conditions.

SECTION 9—INDUSTRIAL HYGIENE CONTROL MEASURES

Respiratory Protection: None normally required.
Ventilation: If mist and/or vapors are present, use air purifying respirator of self-contained breathing apparatus, but this is rarely required.
Eye Protection: Safety glasses, if personally preferred
Gloves: Generally not necessary. Personal preference.

SECTION 10—TOXICOLOGICAL PROPERTIES

Environmental Effects: Not known to be harmful to aquatic life at low concentrations.
Freshwater aquatic toxicity rating: 96 hour LC50 Rainbow Trout = 160 mg/L
96 hour LC50 Salmon = 160 mg/L

SECTION 11—DEPARTMENT OF TRANSPORTATION INFORMATION

Shipping Name: Drilling Mud
Hazard Class: Not hazardous
Hazardous Substances: None
Cautionary Labeling: None required

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*                       M S D S                           *
*                                                         *
*  Canadian Centre for Occupational Health and Safety     *
* * * * * * * * * * * * * Issue : 97-1 (February, 1997) *
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*** IDENTIFICATION ***

MSDS RECORD NUMBER	: 969222
PRODUCT NAME(S)	: MOTOR OILS (ALL GRADES), HYDRAULIC OILS, GEAR OILS, TRANSMISSION FLUIDS
PRODUCT IDENTIFICATION	: DATA SHEET NO: 0170829-007
DATE OF MSDS	: 1992-12-09

*** MANUFACTURER INFORMATION ***

MANUFACTURER	: VALVOLINE, INC
ADDRESS	: Post Office Box 14000 Lexington Kentucky U.S.A. 40512 Telephone: 606-357-7000
EMERGENCY TELEPHONE NO.	: 606-324-1133 (24-HOUR, LOCATED AT ASHLAND, KENTUCKY

*** MATERIAL SAFETY DATA ***

MOTOR OILS (ALL GRADES), HYDRAULIC OILS, GEAR OILS,
TRANSMISSION FLUIDS

THIS MSDS COMPLIES WITH 29 CFR 1910.1200 (THE HAZARD COMMUNICATION STANDARD) IN ADDITION TO WHMIS

PRODUCT NAME: MOTOR OILS, HYDRAULIC OILS, GEAR OILS, TRANSMISSION FLUIDS

DATA SHEET NO: 0170829-007
PREPARED: 12/09/92
SUPERSEDES: 01/01/90

SECTION I - PRODUCT IDENTIFICATION

GENERAL OR GENERIC ID: PETROLEUM BASED-LUBRICATING OIL
DOT HAZARD CLASSIFICATION: NOT APPLICABLE
NOT CONTROLLED PRODUCTS UNDER WHMIS

SECTION II - COMPONENTS

IF PRESENT, IARC, NTP AND OSHA CARCINOGENS AND CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SARA TITLE III SECTION 313 ARE IDENTIFIED IN THIS SECTION.

SEE DEFINITION PAGE FOR CLARIFICATION

INGREDIENT	% (BY WT)	NOTE
NO REGULATED COMPONENTS.		

SECTION III - PHYSICAL DATA

PROPERTY	REFINEMENT	MEASUREMENT
BOILING POINT	FOR COMPONENT	> 425.00 DEG F (218.33 DEG C) @ 760.00 MMHG
VAPOR PRESSURE	NOT APPLICABLE	
SPECIFIC VAPOR DENSITY		HEAVIER THAN AIR
SPECIFIC GRAVITY		<1 @ 60.00 DEG F (15.55 DEG C)
PERCENT VOLATILES	NOT APPLICABLE	
EVAPORATION RATE		SLOWER THAN ETHER
APPEARANCE		NOT SPECIFIED
STATE		LIQUID
FORM		HOMOG SOLN
COEFFICIENT OF WATER/OIL DISTRIBUTION		UNKNOWN
ODOUR/ODOUR THRESHOLD		PETROLEUM ODOUR/UNKNOWN

SECTION IV - FIRE AND EXPLOSION INFORMATION

FLASH POINT > 400.0 DEG F
(204.4 DEG C)

EXPLOSIVE LIMIT UNAVAILABLE

AUTOIGNITION TEMPERATURE UNKNOWN

EXTINGUISHING MEDIA: REGULAR FOAM OR CARBON DIOXIDE OR DRY CHEMICAL

HAZARDOUS DECOMPOSITION PRODUCTS: MAY FORM TOXIC MATERIALS:, CARBON DIOXIDE AND CARBON MONOXIDE, VARIOUS HYDROCARBONS, ETC.

FIREFIGHTING PROCEDURES: WEAR SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN THE POSITIVE PRESSURE DEMAND MODE WHEN FIGHTING FIRES.
WATER OR FOAM MAY CAUSE FROTHING WHICH CAN BE VIOLENT AND POSSIBLY ENDANGER THE LIFE OF THE FIREFIGHTER, ESPECIALLY IF SPRAYED INTO CONTAINERS OF HOT, BURNING LIQUID.

SPECIAL FIRE & EXPLOSION HAZARDS: NEVER USE WELDING OR CUTTING TORCH ON OR NEAR DRUM (EVEN EMPTY) BECAUSE PRODUCT (EVEN JUST RESIDUE) CAN IGNITE EXPLOSIVELY.

NFPA CODES: HEALTH- 1 FLAMMABILITY- 1 REACTIVITY- 0

SECTION V - HEALTH HAZARD DATA

PERMISSIBLE EXPOSURE LIMIT: NOT ESTABLISHED FOR PRODUCT. SEE SECTION II.

EFFECTS OF ACUTE OVEREXPOSURE: FOR COMPONENT

TOXICOLOGICAL TESTING INDICATES THAT SIMILAR PRODUCTS ARE NOT HAZARDOUS AS DEFINED BY OSHA (29 CFR 1910.1200).
LD50 FOR PRODUCT >5G/KG (ORAL-RAT)

FIRST AID:

IF ON SKIN: THOROUGHLY WASH EXPOSED AREA WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. LAUNDER CONTAMINATED CLOTHING BEFORE RE-USE.
IF IN EYES: FLUSH WITH LARGE AMOUNTS OF WATER, LIFTING UPPER AND LOWER LIDS OCCASIONALLY, GET MEDICAL ATTENTION.
IF SWALLOWED: DO NOT INDUCE VOMITING, KEEP PERSON WARM AND QUIET, AND GET MEDICAL ATTENTION.
IF BREATHED: IF AFFECTED, REMOVE INDIVIDUAL TO FRESH AIR. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN. IF BREATHING HAS STOPPED GIVE ARTIFICIAL RESPIRATION. KEEP PERSON WARM, QUIET AND GET MEDICAL ATTENTION.

SECTION VI - REACTIVITY DATA

HAZARDOUS POLYMERIZATION: CANNOT OCCUR
STABILITY: STABLE
INCOMPATIBILITY: AVOID CONTACT WITH:, STRONG OXIDIZING AGENTS.

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

SMALL SPILL: ABSORB LIQUID ON PAPER, VERMICULITE, FLOOR ABSORBENT, OR OTHER ABSORBENT MATERIAL AND TRANSFER TO HOOD.
LARGE SPILL: PREVENT RUN-OFF TO SEWERS, STREAMS OR OTHER BODIES OF WATER. IF RUN-OFF OCCURS, NOTIFY PROPER AUTHORITIES AS REQUIRED, THAT A SPILL HAS OCCURRED.

PERSONS NOT WEARING PROTECTIVE EQUIPMENT SHOULD BE EXCLUDED FROM AREA OF SPILL UNTIL CLEAN-UP HAS BEEN COMPLETED. STOP SPILL AT SOURCE, DIKE AREA OF SPILL TO PREVENT SPREADING, PUMP LIQUID TO SALVAGE TANK. REMAINING LIQUID MAY BE TAKEN UP ON SAND, CLAY, EARTH, FLOOR ABSORBENT, OR OTHER ABSORBENT MATERIAL AND SHOVELED INTO CONTAINERS.

WASTE DISPOSAL METHOD:

SMALL SPILL: ALLOW VOLATILE PORTION TO EVAPORATE IN HOOD. ALLOW SUFFICIENT TIME FOR VAPORS TO COMPLETELY CLEAR HOOD DUCT WORK. DISPOSE OF REMAINING MATERIAL IN ACCORDANCE WITH APPLICABLE REGULATIONS.
LARGE SPILL: DESTROY BY LIQUID INCINERATION.
CONTAMINATED ABSORBENT MAY BE DEPOSITED IN A LANDFILL IN ACCORDANCE WITH LOCAL, PROVINCIAL AND FEDERAL REGULATIONS.

SECTION VIII - PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: NOT REQUIRED UNDER NORMAL CONDITIONS OF USE.
VENTILATION: NOT REQUIRED UNDER NORMAL CONDITIONS OF USE.
PROTECTIVE GLOVES: NOT NORMALLY REQUIRED.
EYE PROTECTION: NOT REQUIRED UNDER NORMAL CONDITIONS OF USE.
OTHER PROTECTIVE EQUIPMENT: NORMAL WORK CLOTHING COVERING ARMS AND LEGS.

MATERIAL SAFETY DATA SHEET

Date Prepared: April 13, 1994
Supersedes: July 18, 1991
MSDS Number: 000116

Cette fiche signalétique est aussi disponible en français

1. PRODUCT INFORMATION

Product Identifier: MIDDLE DISTILLATE (DYED OR CLEAR)
COMMERCIAL FUEL
DIESEL FUEL
DIESEL FUEL FOR EPC REFUELLING
DIESEL QUALITY FURNACE FUEL
DIESEL QUALITY HEATING OIL
ESSO COMMERCIAL FUEL
ESSO DIESEL FUEL
ESSO DIESEL QUALITY COMMERCIAL FUEL
ESSO DIESEL QUALITY FURNACE FUEL
ESSO DIESEL QUALITY HEATING OIL
ESSO FURNACE FUEL
ESSO HEATING OIL
ESSO MARINE DIESEL FUEL
ESSO MARINE GAS OIL
ESSO RAILROAD DIESEL
ESSO RAILROAD DIESEL FUEL
ESSO RAILROAD DIESEL FUEL #3
ESSO TOBACCO CURING OIL
ESSO 3-GP-11M
ESSO 3-GP-15M
FUEL OIL 75
FUEL OIL 76
FURNACE FUEL
HEATING OIL
LOW SULFUR DIESEL
MARINE DIESEL
MARINE GAS OIL
3-GP-11M
3-GP-15M

Application and Use:
Seasonally adjusted middle distillate for use in liquid fuel burning equipment for heating and/or as a fuel for use in an internal combustion engine of the compression ignition type

Product Description:

A complex mixture of aliphatic, olefinic, naphthenic and aromatic hydrocarbons.

REGULATORY CLASSIFICATION

WHMIS:

Class D, Division 2, Subdivision B: Toxic Material
Class B, Division 3: Combustible Liquids.

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT

All components of this product are either on the Domestic Substances List (DSL) or are exempt.

TRANSPORTATION OF DANGEROUS GOODS INFORMATION

Shipping Name: Fuel oil
Class: Flammable liquid 3.3 Packing Group: III
PIN Number: UN1202 Guide Number: 123

Please be aware that other regulations may apply.

TELEPHONE NUMBERS

Emergency 24 hr. (519) 339-2145
Technical Info (800) 268-3183

MANUFACTURER/SUPPLIER:

IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(416) 968-4111

2. REGULATED COMPONENTS

The following components are defined in accordance with sub-paragraph 13(a) (i) to (iv) or paragraph 14(a) of the Hazardous Products Act.

NAME	%	CAS #
Fuel Oil No 2	> 99.9 v/v	68476-30-2

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: not available
Viscosity: 1.30 cSt at 40 deg C
to 11.00 cSt at 40 deg C
Vapour Density: 4
Boiling Point: 150 to 370 deg C
Evaporation rate: < 1 (1 = n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: not available
Odour Threshold: not available
Vapour Pressure: 4 kPa at 38 deg C
Density: 0.85 g/cc at 15 deg C
Appearance/odour: White or pale yellow liquid, petroleum odour

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
High vapour concentrations are irritating to the eyes, nose, throat and lungs; may cause headaches and dizziness; may be anesthetic and may cause other central nervous system effects.
Elevated temperatures or mechanical action may form vapours, mists or fumes which may be irritating to the eyes, nose, throat and lungs.
Avoid breathing vapours or mists.

EYE CONTACT:

Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:

Irritating.
Frequent or prolonged contact may irritate the skin and cause a skin rash (dermatitis).
Low toxicity.

INGESTION:

Low toxicity.
Small amounts of this liquid drawn into the lungs from swallowing or vomiting may cause severe health effects (e.g. bronchopneumonia or pulmonary edema).

CHRONIC:

Lifetime skin painting tests indicate that materials of similar composition have produced skin cancer in experimental animals. The relationship of these results to humans has not been fully established.

ACUTE TOXICITY DATA:

Based on animal testing data from similar materials and products, the acute toxicity of this product is expected to be:
Oral : LD50 > 5000 mg/kg (Rat)
Dermal : LD50 > 2000 mg/kg (Rabbit)
Inhalation : LC50 > 2500 mg/m3 (Rat)

OCCUPATIONAL EXPOSURE LIMIT:

Manufacturer recommends:
100 ppm based on composition.

Local regulated limits may vary.

5. FIRST AID MEASURES

INHALATION:

In emergency situations use proper respiratory protection to immediately remove the affected victim from exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:

Immediately flush with large amounts of water. Use soap if available. Remove contaminated clothing, including shoes, after flushing has begun. If irritation persists, seek medical attention.

Please turn over

...GESTION:

DO NOT induce vomiting since it is important that no amount of the material should enter the lungs (aspiration). Keep at rest. Get prompt medical attention.

6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use.
Where prolonged and/or repeated skin and eye contact is likely to occur, wear safety glasses with side shields, long sleeves, and chemical resistant gloves.
Where skin and eye contact is unlikely, but may occur as a result of short and/or periodic exposures, wear long sleeves and safety glasses with side shields.

Where concentrations in air may exceed the occupational exposure limits given in Section 4 and where engineering, work practices or other means of exposure reduction are not adequate, approved respirators may be necessary to prevent overexposure by inhalation.

ENGINEERING CONTROLS:

The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces.

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care.
Store in a cool, well ventilated place away from incompatible materials.
In keeping with good personal hygiene practices, wash hands thoroughly after handling the material.
Do not handle or store near an open flame, sources of heat, or sources of ignition.
Material will accumulate static charges which may cause a spark. Static charge build-up could become an ignition source. Use proper relaxation and grounding procedures.
Empty containers may contain product residue. Do not pressurize cut, heat, or weld empty containers. Do not reuse empty containers without commercial cleaning or reconditioning.

...D SPILL:

...inate source of ignition. Keep public away. Prevent additional ...arge of material, if possible to do so without hazard.
...ent spills from entering sewers, watercourses or low areas. Contain spilled liquid with sand or earth. Do not use combustible materials such as sawdust.
Recover by pumping (use an explosion proof motor or hand pump), or by using a suitable absorbent.
Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately.
Take all additional action necessary to prevent and remedy the adverse effects of the spill.

WATER SPILL:

Remove from surface by skimming or with suitable absorbents. If allowed by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in unconfined waters.
Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately.
Take all additional action necessary to prevent and remedy the adverse effects of the spill.

7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: >40 deg C PMCT D93

Autoignition: NA Flammable Limits LEL: 0.7% UEL: 6.5%

GENERAL HAZARDS:

Combustible Liquid; may form combustible mixtures at or above the flash point.
Toxic gases will form upon combustion.
Static Discharge; material may accumulate static charges which may cause a fire.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel.
Shut off fuel to fire.
Use foam, dry chemical or water spray to extinguish fire.
Respiratory and eye protection required for fire fighting personnel.
Avoid spraying water directly into storage containers due to danger of boilover.
A self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA may not be required.

HAZARDOUS COMBUSTION PRODUCTS:

Smoke, carbon monoxide, carbon dioxide and traces of oxides of sulphur

8. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION:

none

9. NOTES

10. PREPARATION

Date Prepared : April 13, 1994
Prepared by: LUBRICANTS AND SPECIALTIES
IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(800) 268-3183

CAUTION

CAUTION: " The information contained herein relates only to this product or material and may not be valid when used in combination with any other product or material or in any process. If the product is not to be used for a purpose or under conditions which are normal or reasonably foreseeable, this information cannot be relied upon as complete or applicable. For greater certainty, uses other than those described in Section 1 must be reviewed with the supplier. The information contained herein is based on the information available at the indicated date of preparation. This MSDS is for the use of Imperial Oil customers and their employees and agents only. Any further distribution of this MSDS by Imperial Oil customers is prohibited without the written consent of Imperial Oil."

Esso Imperial Oil MATERIAL SAFETY DATA SHEET

Date Prepared: May 18, 1995
Supersedes: April 13, 1994
MSDS Number: 000115

Cette fiche signalétique est aussi disponible en français

1. PRODUCT INFORMATION

Product Identifier: LIGHT DISTILLATE (DYED OR CLEAR)
DIESEL ARCTIC (DYED OR CLEAR)
DIESEL DEW (DYED OR CLEAR)
DIESEL FUEL LIGHT (DYED OR CLEAR)
DIESEL LIGHT (LOW SULFUR)
DIESEL 60 (DYED OR CLEAR)
ESSO DIESEL ARCTIC (DYED OR CLEAR)
ESSO DIESEL DEW
ESSO DIESEL FUEL LIGHT
ESSO DIESEL FUEL LIGHT (DYED OR CLEAR)
ESSO DIESEL FUEL OIL 50 (DYED OR CLEAR)
ESSO DIESEL FUEL 60 (DYED OR CLEAR)
ESSO DIESEL 60 (DYED OR CLEAR)
ESSO RAILROAD DIESEL 50 (DYED OR CLEAR)
ESSO STOVE OIL (DYED OR CLEAR)
ESSO STOVE QUALITY COMMERCIAL FUEL
ESSO STOVE QUALITY FURNACE FUEL
ESSO STOVE QUALITY HEATING OIL (DYED OR CLEAR)
STOVE OIL
STOVE OIL (DYED OR CLEAR)
STOVE QUALITY FURNACE FUEL
STOVE QUALITY HEATING OIL
STOVE QUALITY HEATING OIL (DYED OR CLEAR)

Application and Use:
Clean burning, low sulphur, low temperature operability type light distillate used in liquid fuel burning equipment for heating and/or as a fuel for use in an internal combustion engine of the compression type

Product Description:

A complex mixture of aliphatic, olefinic, naphthenic and aromatic hydrocarbons.

REGULATORY CLASSIFICATION

WHMIS:

Class B, Division 3: Combustible Liquids.
Class D, Division 2, Subdivision B: Toxic Material

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT

All components of this product are either on the Domestic Substances List (DSL) or are exempt.

TRANSPORTATION OF DANGEROUS GOODS INFORMATION

Shipping Name: Fuel oil
Class: Flammable liquid 3.3 Packing Group: III
PIN Number: UN1202 Guide Number: 128

Please be aware that other regulations may apply.

TELEPHONE NUMBERS

Emergency 24 hr. (519) 339-2145
Technical Info. (800) 268-3183

MANUFACTURER/SUPPLIER:

IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(416) 968-4111

2. REGULATED COMPONENTS

The following components are defined in accordance with sub-paragraph 13(a)(i) to (iv) or paragraph 14(a) of the Hazardous Products Act:

NAME	%	CAS #	
Kerosene, straight run	0-100 v/v	8008-20-6	LD50: > 5g/kg, oral, rat
Light Atmospheric Gas Oil	0-100 v/v	64741-44-2	
Light Hydrocracked Distillate	0-100 v/v	64741-77-1	

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: not available
Viscosity: 1.30 cSt at 40 deg C
to 2.40 cSt at 40 deg C
Vapour Density: 4
Boiling Point: 180 to 320 deg C
Evaporation rate: < 1 (1 = n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: -39 deg C D97
Odour Threshold: not available
Vapour Pressure: 4 kPa at 38 deg C
Density: 0.82 g/cc at 15 deg C
Appearance/odour: White or pale yellow liquid, petroleum odour

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
High vapour concentrations are irritating to the eyes, nose, throat and lungs; may cause headaches and dizziness; may be anesthetic and may cause other central nervous system effects.
Avoid breathing vapours or mists.

EYE CONTACT:

Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:

Irritating.
Frequent or prolonged contact may irritate the skin and cause a skin rash (dermatitis).
Low toxicity.

INGESTION:

Low toxicity.
Small amounts of this liquid drawn into the lungs from swallowing or vomiting may cause severe health effects (e.g. bronchopneumonia or pulmonary edema).

CHRONIC:

Lifetime skin painting tests indicate that materials of similar composition have produced skin cancer in experimental animals. The relationship of these results to humans has not been fully established.

ACUTE TOXICITY DATA:

Based on animal testing data from similar materials and products, the acute toxicity of this product is expected to be:
Oral : LD50 > 5000 mg/kg (Rat)
Dermal : LD50 > 2000 mg/kg (Rabbit)
Inhalation : LC50 > 2500 mg/m3 (Rat)

OCCUPATIONAL EXPOSURE LIMIT:

Manufacturer recommends:
100 ppm based on composition.

Local regulated limits may vary.

5. FIRST AID MEASURES

INHALATION:

In emergency situations use proper respiratory protection to immediately remove the affected victim from exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:

Immediately flush with large amounts of water. Use soap if available. Remove contaminated clothing, including shoes, after flushing has begun If irritation persists, seek medical attention.

Please turn over

INGESTION:

DO NOT induce vomiting since it is important that no amount of the material should enter the lungs (aspiration). Keep at rest. Get prompt medical attention.

6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use.
Where prolonged and/or repeated skin and eye contact is likely to occur, wear safety glasses with side shields, long sleeves, and chemical resistant gloves.
Where skin and eye contact is unlikely, but may occur as a result of short and/or periodic exposures, wear long sleeves and safety glasses with side shields.

Where concentrations in air may exceed the occupational exposure limits given in Section 4 and where engineering, work practices or other means of exposure reduction are not adequate, approved respirators may be necessary to prevent overexposure by inhalation.

ENGINEERING CONTROLS:

The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces.

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care.
Store in a cool, well ventilated place away from incompatible materials.
In keeping with good personal hygiene practices, wash hands thoroughly after handling the material.
Do not handle or store near an open flame, sources of heat, or sources of ignition.
Material will accumulate static charges which may cause a spark. Static charge build-up could become an ignition source. Use proper relaxation and grounding procedures.
Empty containers may contain product residue. Do not pressurize cut, heat, or weld empty containers. Do not reuse empty containers without commercial cleaning or reconditioning.

LAND SPILL:

Eliminate source of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard.
Prevent spills from entering sewers, watercourses or low areas. Contain spilled liquid with sand or earth. Do not use combustible materials such as sawdust.
Recover by pumping (use an explosion proof motor or hand pump), or by using a suitable absorbent.
Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately.
Take all additional action necessary to prevent and remedy the adverse effects of the spill.

WATER SPILL:

Remove from surface by skimming or with suitable absorbents. If allowed by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in unconfined waters.
Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately.
Take all additional action necessary to prevent and remedy the adverse effects of the spill.

7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: 40 deg C PMCT D93

Autoignition: NA Flammable Limits: LEL: 0.7% UEL: 6.5%

GENERAL HAZARDS:

Combustible Liquid; may form combustible mixtures at or above the flash point.
Toxic gases will form upon combustion.
Static Discharge; material may accumulate static charges which may cause a fire.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel.
Shut off fuel to fire.
Use foam, dry chemical or water spray to extinguish fire.
Respiratory and eye protection required for fire fighting personnel.
Avoid spraying water directly into storage containers due to danger of boilover.
A self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA may not be required.

HAZARDOUS COMBUSTION PRODUCTS:

Smoke, carbon monoxide, carbon dioxide and traces of oxides of sulphur

8. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION:

none

9. NOTES

10. PREPARATION

Date Prepared : May 18, 1995
Prepared by: LUBRICANTS AND SPECIALTIES
IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(800) 268-3183

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*                          M S D S                              *
*                                                               *
*  Canadian Centre for Occupational Health and Safety           *
* * * * * * * * * * * * * * Issue : 97-1 (February, 1997) *
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*** IDENTIFICATION ***

MSDS RECORD NUMBER	421419
PRODUCT NAME(S)	DIESEL FUEL Other Names: Diesel 20X, 0, 15, 20, 25, 30, 40, 40S 50, 60 Diesel AA, Diesel GM 35, 45 Domestic Marine Diesel
PRODUCT IDENTIFICATION	W104E(9204)
DATE OF MSDS	1992-04-01
CURRENCY NOTE	This MSDS is currently under revision by Petro-Canad and a more updated version is, or may be, available from Petro-Canada directly. Petro-Canada will be updating their MSDS collection in the CCOHS MSDS database in the near future.

*** MANUFACTURER INFORMATION ***

MANUFACTURER	PETRO-CANADA
ADDRESS	POST OFFICE BOX 2844 PETRO-CANADA CENTRE CALGARY ALBERTA CANADA T2P 3E3
EMERGENCY TELEPHONE NO.	403-296-3000

***

MESSAGE FROM PETRO-CANADA: PETRO-CANADA AND ITS AFFILIATES ASSUME NO RESPONSIBILITY FOR INJURY TO ANYONE CAUSED BY THE MATERIAL IF REASONABLE SAFETY PROCEDURES ARE NOT ADHERED TO AS STIPULATED IN THE DATA SHEET. ADDITIONALLY, PETRO-CANADA AND ITS AFFILIATES ASSUME NO RESPONSIBILITY FOR INJURY TO ANYONE CAUSED BY ABNORMAL USE OF THE MATERIAL EVEN IF REASONABLE SAFETY PROCEDURES ARE FOLLOWED. FURTHERMORE, VENDEE AND THIRD PERSONS ASSUM THE RISK IN THEIR USE OF THE MATERIAL.

*** SUPPLIER/DISTRIBUTOR INFORMATION ***

SUPPLIER/DISTRIBUTOR	PETRO-CANADA
ADDRESS	POST OFFICE BOX 2844 PETRO-CANADA CENTRE CALGARY ALBERTA CANADA T2P 3E3
EMERGENCY TELEPHONE NO.	403-296-3000

*** MATERIAL SAFETY DATA ***

MATERIAL SAFETY DATA SHEET

WHMIS CLASSIFICATION

Combustible Liquid (Class B3) PRODUCT CODE: N/A
Poisonous Material (D2) DATE PREPARED: April 1, 1992

SECTION I MATERIAL IDENTIFICATION

Trade Name:	DIESEL FUEL
Other Names:	Diesel 20X, 0, 15, 20, 25, 30, 40, 40S, 50, 60 Diesel AA, Diesel GM 35, 45 Domestic Marine Diesel
Chemical Synonyms and Family:	Petroleum hydrocarbon
Poison Control Centre Numbers:	Consult local telephone directory for emergency numbers.
Application:	Diesel fuels are distillate fuels suitable for use in high and medium speed internal combustion engines of the compression ignition type.

SECTION II TRANSPORTATION

UN Number: 1202
Primary Classification: 3.3
Subsidiary Classification: NR
Compatibility Groups: N/A
CANUTEC Transport Emergency No.: (613) 996-6666

SECTION III COMPOSITION

COMPONENTS	% (VOL.)	CAS #
Complex mixture of petroleum hydrocarbons* (C9 - C18).	>99.9	68334-30-5
ALLOWABLE LIMITS (8 h) 5 mg/m3 (oil mist)**		
Anti-static additive, cetane improver, pour point depressant.	<0.1	N/A
ALLOWABLE LIMITS (8 h) N/A		

* Aromatic content is 38% maximum (benzene nil)
** Petro-Canada recommendation.

SECTION IV PHYSICAL DATA

Density (@ 15 deg C):	0.78-0.90 kg/L
Vapour Pressure (@ 25 deg C):	1 kPa (approx.)
Vapour Density (@ 20 deg C):	4.5 (approx.)
Solubility in Water:	Insoluble
Viscosity (Kinematic): (@ 40 deg C)	1.2-4.1 cSt
Pour Point:	-50 to -6 deg C (-58 to 20 deg F)
Boiling Point/Range (@ 1 atm):	145-371 deg C (approx.)
Percent Volatile (@ 20 deg C):	U
Evaporation Rate:	N/A
Appearance & Odour:	Clear to yellow, bright oily liquid with hydrocarbon odour.**

** May be dyed purple or red for taxation purposes.

SECTION V FIRE & EXPLOSION DATA

Flash Point (method used = COC):	40 deg C (minimum)
Flammable limits in air (% by volume):	Lower 0.7% Upper 6.0%
Auto-Ignition Temperature:	>225 deg C
Fire and Explosion Hazards: MODERATE FIRE HAZARD	Treat as combustible liquid. Do not cut, drill or weld empty containers.
Extinguishing Media:	Dry chemical or carbon dioxide for small fires. Water spray or foam for large fires.
Fire Fighting Procedures:	Use full protective equipment and self-contained breathing apparatus. Cover with extinguishing agent. Use water spray to cool fire-exposed containers and as a protective screen. Do not point solid water stream directly into burning product to avoid spreading fire.

SECTION VI HEALTH HAZARD INFORMATION

Toxicity Data

* Estimated acute LD50 = 7650 mg/kg (rat, oral): practically non-toxic.
Rabbit primary dermal irritation index (Draize) = 6.8: extremely irritating. Rabbit eye irritation index (Draize) = 0: non-irritating.

Effects of Overexposure

Inhalation:	Inhalation of vapours or mist will cause headaches, nausea, dizziness, and intoxication; severe central nervous system depressant.
Skin and Eyes:	Irritation, defatting and drying of skin. Prolonged exposure to skin may cause chapping, cracking or possibly dermatitis. Eye contact may cause irritation, but not permanent damage.
Ingestion:	Ingestion is unlikely.

Based on API Study #79-6 on diesel fuel where LD50=9.0 mL/k (rat, oral).

Emergency and First Aid Procedures Information

Skin:	Remove contaminated clothing - launder before reuse. Soap and water wash. Discard saturated leather articles.
Eyes:	Copious warm water flush - 15 minutes. Physician assessment mandatory.
Inhalation:	Evacuate to fresh air. Apply Cardio Pulmonary Resuscitation if required. Administer oxygen if available. If resuscitation is required, physician assessment is mandatory.
Ingestion:	DO NOT INDUCE VOMITING. If vomiting - take care to prevent aspiration. Give 250 mL. (1/2 pint) of milk to drink. Mandatory physician assessment.
Notes to Physician:	Gastric lavage should only be done after endotracheal intubation in view of the risk of aspiration which can cause serious chemical pneumonitis for which antibiotic

and corticosteroid therapy may be indicated.

SECTION VII REACTIVITY DATA

Stability:	Stable under normal storage and use.
Conditions to avoid:	Excessive heat, sources of ignition, formation of oil mist.
Materials to avoid:	Strong oxidizing agents (strong acids, peroxides, chlorine, etc).
Hazardous Decomposition products:	COx, SOx, smoke on combustion.
Can hazardous polymerization occur?:	No.

SECTION VIII SPILL OR LEAK PROCEDURES

Steps to be taken if material is released or spilled:	Avoid contact. Use full protective equipment and breathing apparatus if required. ELIMINATE IGNITION SOURCES. Contain spill. Absorb with inert absorbent such as dry clay, sand or diatomaceous earth, commercial sorbents, or recover using electrically grounded explosion-proof pumps. Place absorbent in closed metal containers. DO NOT FLUSH TO SEWER.
Waste Disposal Method:	Dispose in approved, SECURE contaminated waste landfill site or licensed waste reclaimer facility. Check with applicable jurisdictions for specific disposal requirements.

SECTION IX SPECIAL PROTECTION INFORMATION

Ventilation:	General ventilation. Use explosion-proof mechanical ventilation suitable for group D atmospheres.
Respiratory Protection:	Up to 5 mg/m3 (oil mist), none required. From 5 to 50 mg/m3, use an approved organic vapour respirator suitable for oil mist in areas with sufficient oxygen. Above 50 mg/m3, use full-face air-supplied or self-contained breathing apparatus.
Protective Gloves:	For direct contact with hydrocarbons of more than 2 hours, VITON or NITRILE recommended. Otherwise, PVC gloves may be worn.
Eye Protection:	Chemical goggles if splashing likely.
Other Protective Clothing:	Wear long sleeved clothing to minimize skin contact.

SECTION X SPECIAL PRECAUTIONS

Store in cool, well-ventilated area. Electrically ground/bond during pumping / transfer to avoid static accumulation. AVOID SKIN CONTACT AND INHALATION. Practice good personal hygiene. DO NOT SIPHON BY MOUTH OR USE AS A CLEANING SOLVENT. Launder work clothes frequently. Petro-Canada recommends an

allowable exposure of 5 mg/m3 (oil mist) when handling DIESEL FUELS.

SECTION XI REFERENCES

ACGIH, Threshold Limit Values and Biological Exposure Indices for 1991.
CONCAWE, First Aid Measures, Medical Toxicology Data and Professional Advice to Clinicians on Petroleum Products, February 1983.
API, Petroleum Process Stream Terms Included in the Chemical Substances Inventory Under the Toxic Substances Control Act (TSCA), 1983.
Environment Canada Manual for Spills of Hazardous Materials, March, 1984.
Patty's Industrial Hygiene and Toxicology, 3rd Edition, Vol. 2B, 1981.
NIOSH, The Industrial Environment - Its Evaluation and Control, 1973.
API, Acute Toxicity Tests on Diesel Fuel, API # 79-6, 1980.
API, The Toxicology of Petroleum Hydrocarbons, May, 1982.

Prepared by Environment, Safety and Hygiene
Cette fiche est aussi disponible en francais.

NR-Not Regulated N/A-Not Applicable U-Unknown
W104E(9204)

SN: 421419

Esso Imperial Oil — MATERIAL SAFETY DATA SHEET

Date Prepared: July 25, 1996
Supersedes: April 11, 1994
MSDS Number: 000108

Cette fiche signalétique est aussi disponible en français

1. PRODUCT INFORMATION

Product Identifier: UNLEADED GASOLINE (DYED OR CLEAR)
ESSO EXTRA MIDGRADE GASOLINE
ESSO EXTRA MIDGRADE UNLEADED
ESSO MIDGRADE UNLEADED
ESSO PREMIUM UNLEADED
ESSO REGULAR UNLEADED
ESSO SUPER PREMIUM UNLEADED
ESSO SUPREME PREMIUM UNLEADED
ESSO SUPREME 92 PREMIUM UNLEADED
ESSO UNLEADED (REGULAR)
EXXON MIDGRADE UNLEADED
EXXON PREMIUM UNLEADED
EXXON REGULAR UNLEADED
INDOLENE GASOLINE
MIDGRADE GASOLINE
MIDGRADE UNLEADED
PREMIER GASOLINE
PREMIUM UNLEADED
REGULAR UNLEADED
SUPERSUPREME 94 PREMIUM UNLEADED GASOLINE-MTBE

Application and Use:
Unleaded fuel for spark ignited engines. The product name will include "DYED" if the product is dyed for tax purposes.

Product Description:

A mixture of aliphatic and aromatic hydrocarbons and additives.

REGULATORY CLASSIFICATION

WHMIS:

Class D, Division 2, Subdivision A: Very Toxic Material.
Class B, Division 2: Flammable Liquids.

TRANSPORTATION OF DANGEROUS GOODS INFORMATION

Shipping Name: Gasoline
Class: Flammable Liquid 3.1 — Packing Group: II
PIN Number: UN1203 — Guide Number: 119

Please be aware that other regulations may apply.

TELEPHONE NUMBERS

Emergency 24 hr. (519) 338-2145
Technical Info. (800) 268-3183

MANUFACTURER/SUPPLIER:

IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(416) 968-4111

2. REGULATED COMPONENTS

The following components are defined in accordance with sub-paragraph 13(a)(i) to (iv) or paragraph 14(a) of the Hazardous Products Act:

NAME	%	CAS #	
Gasoline	> 88 v/v	8006-61-9	LD50 > 18ml/kg,orl,rat LD50 > 5ml/kg,skn,rbt
Methyl T-Butyl Ether	0-11 v/v	1634-04-4	LD50:3.9g/Kg,ing,rat LD50: > 10g/Kg,skn,rbt LC50:142Mg/L,inh,rat

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: not available
Viscosity: 0.80 cSt at 20 deg C
Vapour Density: 3.2
Boiling Point: 25 to 210 deg C
Evaporation rate: > 10 (1 = n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: -60 deg C less than
Odour Threshold: not available
Vapour Pressure: 76 kPa to 103 kPa at 38 deg C
Density: 0.73 g/cc at 15 deg C
Appearance/odour: Naturally occurring water white or pale yellow; may be dyed a variety of colours for tax or other purposes; petroleum odour.

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

High vapour concentrations are irritating to the eyes, nose, throat and lungs; may cause headaches and dizziness; may be anesthetic and may cause other central nervous system effects.
Avoid breathing vapours or mists.

EYE CONTACT:

Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:

Low toxicity.
Frequent or prolonged contact may irritate the skin and cause a skin rash (dermatitis).

INGESTION:

Low toxicity.
Small amounts of this liquid drawn into the lungs from swallowing or vomiting may cause severe health effects (e.g. bronchopneumonia or pulmonary edema).

CHRONIC:

The International Agency for Research on Cancer (IARC) has evaluated gasoline and found it to be a possible human carcinogen.
Contains benzene. Human health studies (epidemiology) indicate that prolonged and/or repeated overexposures to benzene may cause damage to the blood producing system and serious blood disorders, including leukemia.
Animal tests suggest that prolonged and/or repeated overexposures to benzene may damage the embryo/fetus. The relationship of these animal studies to humans has not been fully established.
Contains n-hexane. Prolonged and/or repeated exposures may cause damage to the peripheral nervous system (e.g. fingers, feet, arms etc.).
Studies indicate that this material is an animal carcinogen. The relationship of these results to humans has not been fully established.

ACUTE TOXICITY DATA:

Based on animal testing data from similar materials and products, the acute toxicity of this product is expected to be:
Oral : LD50 > 18 ml/kg (Rat)
Dermal : LD50 > 5 ml/kg (Rabbit)

OCCUPATIONAL EXPOSURE LIMIT:

Manufacturer recommends:
For Benzene (skin) 1 ppm TWA for 8 hour workday.
For gasoline, 300 mg/m3.
For Methyl-tert-Butyl Ether, a 15 minute short-term exposure limit (STEL) of 50 ppm.

ACGIH recommends:
For Gasoline, 300 ppm (900 mg/m3).
For n-Hexane, 50 ppm (180 mg/m3).
For Benzene, the ACGIH recommends a TLV of 10 ppm (30 mg/m3), and describes it as a substance of suspect carcinogenic potential in man.
For Methyl-tert-Butyl Ether, 40 ppm (144 mg/m3).

Local regulated limits may vary.

5. FIRST AID MEASURES

INHALATION:

In emergency situations use proper respiratory protection to immediately remove the affected victim from exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:

Flush with large amounts of water. Use soap if available.
Remove severely contaminated clothing (including shoes) and launder

Please turn over

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:

Immediately flush with large amounts of water. Use soap if available. Remove contaminated clothing, including shoes, after flushing has begun. If irritation persists, seek medical attention.

INGESTION:

DO NOT induce vomiting since it is important that no amount of the material should enter the lungs (aspiration). Keep at rest. Get prompt medical attention.

6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use.
Where prolonged and/or repeated skin and eye contact is likely to occur, wear safety glasses with side shields, long sleeves, and chemical resistant gloves.
Where skin and eye contact is unlikely, but may occur as a result of short and/or periodic exposures, wear long sleeves and safety glasses with side shields.

Where concentrations in air may exceed the occupational exposure limits given in Section 4 and where engineering, work practices or other means of exposure reduction are not adequate, approved respirators may be necessary to prevent overexposure by inhalation.

ENGINEERING CONTROLS:

The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces.

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care.
Store in a cool, well ventilated place away from incompatible materials.
In keeping with good personal hygiene practices, wash hands thoroughly after handling the material.
Do not handle or store near an open flame, sources of heat, or sources of ignition.
Material will accumulate static charges which may cause a spark. Static charge build-up could become an ignition source. Use proper relaxation and grounding procedures.
Empty containers may contain product residue. Do not pressurize cut, heat, or weld empty containers. Do not reuse empty containers without commercial cleaning or reconditioning.

LAND SPILL:

Eliminate source of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard.
Prevent spills from entering sewers, watercourses or low areas. Contain spilled liquid with sand or earth. Do not use combustible materials such as sawdust.
Recover by pumping (use an explosion proof motor or hand pump), or by using a suitable absorbent.
Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately.
Take all additional action necessary to prevent and remedy the adverse effects of the spill

WATER SPILL:

Remove from surface by skimming or with suitable absorbents. If allowed by local authorities and environmental agencies, sinking and/or suitable dispersants may be used in unconfined waters.
Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately.
Take all additional action necessary to prevent and remedy the adverse effects of the spill.

7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: > 40 deg C PMCT D93

Autoignition: NA Flammable Limits: LEL: 0.7% UEL: 6.5%

GENERAL HAZARDS:

Combustible Liquic; may form combustible mixtures at or above the flash point.
Toxic gases will form upon combustion

Static Discharge; material may accumulate static charges which may cause a fire.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel.
Shut off fuel to fire.
Use foam, dry chemical or water spray to extinguish fire.
Respiratory and eye protection required for fire fighting personnel.
Avoid spraying water directly into storage containers due to danger of boilover.
A self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA may not be required.

HAZARDOUS COMBUSTION PRODUCTS:

Smoke, carbon monoxide, carbon dioxide and traces of oxides of sulphur

8. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents

HAZARDOUS DECOMPOSITION:

none

9. NOTES

10. PREPARATION

Date Prepared : April 13, 1994
Prepared by: LUBRICANTS AND SPECIALTIES
IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(800) 268-3183

* *
* MSDS *
*
* Canadian Centre for Occupational Health and Safety *
* * * * * * * * * * Issue : 97-1 (February, 1997) *

*** IDENTIFICATION ***

MSDS RECORD NUMBER : 1307882
PRODUCT NAME(S) : REGULAR UNLEADED GASOLINE MMT-FREE
PRODUCT IDENTIFICATION : SHELL CANADA CODE 211-003
DATE OF MSDS : 1994-11-15

*** MANUFACTURER INFORMATION ***

MANUFACTURER : SHELL CANADA LIMITED
ADDRESS : Post Office Box 100 Station M
Calgary Alberta
Canada T2P 2H5
Telephone: 403-691-3111
EMERGENCY TELEPHONE NO. : 403-691-2220 (BUSINESS HOURS)
800-661-7378 (AT ALL OTHER TIMES)
613-996-6666 (CANUTEC, 24 HOUR)

*** MATERIAL SAFETY DATA ***

MATERIAL SAFETY DATA SHEET

MSDS NUMBER: 211-003

SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME: REGULAR UNLEADED GASOLINE MMT-FREE
MANUFACTURER/SUPPLIER'S NAME: SHELL CANADA LIMITED
ADDRESS: P.O. Box 100, Station M
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
Automotive Fuel
Petrol
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:
Class 3 Flammable Liquid
UN NUMBER: 1203
PACKING GROUP: II

SECTION 2 INGREDIENTS & TOXICOLOGICAL PROPERTIES

LEGEND: CBI - CONFIDENTIAL BUSINESS INFORMATION
24 - PRODUCT & CONTROLLED INGREDIENTS
PRODUCT: REGULAR UNLEADED GASOLINE MMT-FREE 100% VOL
CAS# : 8006-61-9 WHMIS CONTROLLED: YES
Rat Oral LD50 18800.0 mg/kg
Rabbit Dermal LD50 > 8000.0 mg/kg
BENZENE 1.0 - 5.0 % V
CAS# : 71-43-2 WHMIS CONTROLLED: YES
Rat Oral LD50 > 5600.0 mg/kg
Inhal. LC50 13700.0 ppm 4.00 hrs

28 - 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.
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.
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, and central nervous system depression. Prolonged immersion in liquid may lead to chemical burns. The liquid when accidently aspirated into the lungs can cause a severe inflammation of the lung.

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
Start rinsing and remove contaminated clothing while rinsing. Wash contaminated skin with mild soap and water. 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 EMPLOYEE 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 - VALID 1995/1996

Gasoline: 300 ppm, 890 mg/m3 (TLV/TWA) ACGIH
500 ppm,1480 mg/m3 (TLV/STEL) 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)

Impervious gloves should be worn at all times when handling this product. PVC or nitrile rubber gloves 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

If exposure exceeds occupational exposure limits, wear a NIOSH- approved respirator. Use a chemical cartridge respirator (half mask or full-facepiece) with organic vapour cartridge. For high concentration use 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

Extremely flammable. Store in a cool, dry, well ventilated area, away from heat and ignition sources. Protect against physical damage to containers. 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. Do not use as a cleaning solvent. 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 or using toilet facilities.

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 direc contact with material. Wear appropriate breathin apparatus (if applicable) and protective clothing. Stop leak only if safe t do so. Dike and contain land spills; contain water spills by booming. Us water fog to knock down vapours; contain runoff. Absorb residue or smal spills with absorbent material and remove to non-leaking containers fo disposal. Recommended materials: Clay or Sand Flush area with water to remov trace residue. Dispose of recovered material as noted below.

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 licencec waste disposal site with approval of environmental authority.

SECTION 6 PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE

Liquid

ODOUR AND APPEARANCE

Typical Gasoline Odour Clear

AVERAGE ODOUR THRESHOLD	:	> 0.25 ppm
BOILING POINT (DEG C)	:	35 - 220
FREEZING POINT (DEG C)	:	NOT AVAILABLE
DENSITY (KG/M3 @ DEG C)	:	750.00 - 850.00 @ 15
VAPOUR DENSITY (AIR=1)	:	3.5
VAPOUR PRESSURE (MMHG @ DEG C)	:	NOT AVAILABLE
SPECIFIC GRAVITY (H2O=1)	:	NOT AVAILABLE
PH LEVEL	:	NOT AVAILABLE
VISCOSITY (CST @ DEG C)	:	< 1.00 @ 38
EVAPORATION RATE (NBUAC=1)	:	NOT AVAILABLE
PARTITION COEFFICIENT (KOW)	:	2.00
WATER SOLUBILITY	:	Insoluble
OTHER SOLVENT	:	Hydrocarbon Solvents
MOLECULAR WEIGHT (G)	:	NOT AVAILABLE
FORMULA	:	MIXTURE OF C4-C11 HYDROCARBONS

SECTION 7 REACTIVITY, FIRE AND EXPLOSION HAZARD

7A - FIRE AND EXPLOSION HAZARD

FLASH POINT (DEG C) AND METHOD:

-30 Tag Closed Cup

FLAMMABLE LIMITS / % VOLUME IN AIR

LFL: 1.4 UFL: 7.6

AUTOIGNITION TEMP. (DEG C):

280

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. 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 r ture. Container areas exposed to direct flame contac
should be cooled with large quantities of water as needed to prevent weakenir
of container structure.

7B - REACTIVITY DATA

HAZARDOUS COMBUSTION / DECOMPOSITION PRODUCTS

Vapour forms a flammable/explosive mixture with air between upper and lowe
flammable limits. Vapours may travel along ground and flashback along vapou
trail may occur.
Nitrogen oxides, carbon monoxide, carbon dioxide and unidentified organi
compounds may be formed during 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 or
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 readily biodegradable. Potential for bioaccumulation. Rapid
volatilization.

SECTION 9 LABEL INFORMATION

TDT TRADE NAME: REGULAR UNLEADED GASOLINE MMT-FREE

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: 1994/11/15 SUPERCEDES MSDS DATED: 1994/10/06

10B - SUPPLEMENTAL INFORMATION

REVISIONS

- The status of Shell products with respect to the Domestic Substances List will be provided in Section 8, as the information becomes available.

REF.011994111599

M S D S

Canadian Centre for Occupational Health and Safety
Issue : 97-1 (February, 1997)

*** IDENTIFICATION ***

MSDS RECORD NUMBER	1322365
PRODUCT NAME(S)	Calcium Chloride
PRODUCT IDENTIFICATION	PRODUCT CODE: 93515
DATE OF MSDS	1996-11-14

*** MANUFACTURER INFORMATION ***

MANUFACTURER	CHAMPION TECHNOLOGIES, LTD
ADDRESS	6555 - 30th Street South East Calgary Alberta Canada T2C 1R4
EMERGENCY TELEPHONE NO.	403-279-2835 613-996-6666 (CANUTEC)

*** SUPPLIER/DISTRIBUTOR INFORMATION ***

SUPPLIER/DISTRIBUTOR	: CHAMPION TECHNOLOGIES, LTD
ADDRESS	: 6555 - 30th Street South East Calgary Alberta Canada T2C 1R4
EMERGENCY TELEPHONE NO.	403-279-2835 613-996-6666 (CANUTEC)

*** MATERIAL SAFETY DATA ***

MATERIAL SAFETY DATA SHEET
Calcium Chloride

SECTION 1 - IDENTIFICATION

CHAMPION TECHNOLOGIES, LTD.
6555 - 30th Street S.E.
Calgary, Alberta T2C 1R4
Trade Name: Calcium Chloride
Chemical Family: Salt
Product Use: Industrial
Printed: 11/14/96

IBM 93515
EMERGENCY TELEPHONE NUMBERS
1-403-279-2835
1-613-996-6666 (CANUTEC)

Prepared by: J.Bursey

SECTION 2 - HAZARDOUS INGREDIENTS/IDENTITY

Hazardous Components	CAS No.	Wt.%	LD50	LC50
CALCIUM CHLORIDE	10043-52-4	60-100	NA	NA

SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS

Physical State:	solid	Vapor Point, C:	ND
Boiling Point, C:	204.	Vapor Pressure:	NA
Freezing Point, C:	NA	Vapor Density:	ND
pH:	NA	Specific Gravity (H20=1):	2.2
Coeff. Water/Oil Dist.:	ND	Evaporation Rate:	ND

Odour Threshold (ppm): ND (butyl acetate=1)
Odour and Appearance White to off white pepp[illegible]s

SECTION 4 - FIRE & EXPLOSION DATA

Flash Point, C & Method Flammable Limits: LEL,% NA UEL,% NA
NA PMCC Based on: NA
Autoignition Temp C: ND
Hazardous Combustion Products: Smoke, CO, CO2, & vapors
Explosion Data: ND
Sensitivity to Static Discharge: ND
FIRE HAZARDS:
Flammable material may be ignited by heat, sparks, or flames. Vapours may travel to a source of ignition and flashback. Containers may explode in heat or fire.Vapour exploration hazard indoors, outdoors or in sewers. Run off to sewer may creat fire or explosion hazard.
EXTINGUISHING MEDIA:
Dry chemical, co2, water spray or regular foam. Move container from fire area if you can do it without risk. Apply cooling water to sides of containers that are exposed to flames until well after the fire is out. Stay away from ends of containers.

Abbreviations: NA=not available, NAP=not applicable, ND=not determined.

Calcium Chloride

SECTION 5 - PHYSICAL HAZARDS (REACTIVITY DATA)

Chemical Stability: STABLE
Conditions To Avoid: NA
Incompatible Materials: Strong oxidizers
Hazardous Decomposition: Oxides of carbon and nitrogen

SECTION 6 - HEALTH HAZARDS

PRIMARY ROUTES OF ENTRY
Inhalation: X Absorption: Ingestion: X Injection: NA
HEALTH HAZARDS:
Contact may irritate or burn skin and eyes. Fire may produce irritating gases. Runoff from fire control or dilution water may cause pollution.
EMERGENCY & FIRST AID PROCEDURES:
Move victim to fresh air and call emergency medical care. If not breathing give artificial respiration. If breathing is difficult, give oxygen under supervision.
In case of eye contact, immediately flush with running water for at least 15 minutes. In case of skin contact, wash with soap and water. In case of ingestion, call a physician
Do not induce vomiting.

Carcinogenicity? ND

SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
Stop leak if you can do it without risk. Take up with sand or other noncombustible absorbent material and place in containers for later disposal.
HANDLING PROCEDURES AND EQUIPMENT:

handle carefully, avoid smoking, drinking, or eating on use. Wear adequate protective clothes. Handle and open container with care. In case of accident or if you feel ill, seek medical advice.

Calcium Chloride

STORAGE REQUIREMENTS:
Store in well ventilated area, away from all sources of ignition. Keep away from children. Do not store near foodstuffs. Store in a duly identified container. Observe local regulations.

ATTENTION:
Do not cut, puncture or weld on or near this container.

WASTE DISPOSAL METHOD:
Contact all municipal, provincial and federal regulations.

SECTION 8 - SPECIAL PROTECTION INFORMATION/CONTROL MEASURES

Respiratory Protection (Specify Type):
NONE REQUIRED UNDER NORMAL CONDITIONS.
Ventilation: Local Exhaust: Recommended General Exhaust: Recommended
Special: NA
Protective Gloves: Chemically Resistant / Non-Slip
Eye Protection: Chemical Safety Goggles / Safety Glasses
Other Protective Clothing or Equipment: Coveralls, Splash Aprons, Eye Wash, and Safety Shower

Work/Hygenic Practices:
Clean up Spills Promptly, Wash Contaminated Clothing.

SECTION 9 - SHIPPING DATA

Hazard Classification:	UN/NA No.:	Labels Required:
NOT-REGULATED	NONE	NONE

Proper Shipping Name/Description:
SHIPPING DESCRIPTION:
None (CALCIUM CHLORIDE)

pH:	Flash Point, C:	Pkg. Group:
NA	NA	NONE

This information is based on data believed by Champion Technologies, Ltd. to be accurate, but no warranty, express or implied is made.

Esso Imperial Oil — MATERIAL SAFETY DATA SHEET

Date Prepared: May 18, 1995
Supersedes: April 13, 1994
MSDS Number: 000110

Cette fiche signalétique est aussi disponible en français

1. PRODUCT INFORMATION

Product Identifier: TURBINE FUEL AVIATION, WIDE CUT TYPE
ESSO JET B
ESSO TURBO FUEL B
JET B
TURBO FUEL B
TURBO FUEL B F40
TURBO FUEL B JP4

Application and Use:
Naphtha-kerosene blended aviation fuel for turbine-powered aircraft

Product Description:

A mixture of aliphatic and aromatic hydrocarbons and additives

REGULATORY CLASSIFICATION

WHMIS:

Class B, Division 2: Flammable Liquids.
Class D, Division 2, Subdivision A: Very Toxic Material.
Class D, Division 2, Subdivision B: Toxic Material

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT

All components of this product are either on the Domestic Substances List (DSL) or are exempt.

TRANSPORTATION OF DANGEROUS GOODS INFORMATION

Shipping Name: Fuel, Aviation, Turbine Engine
Class: Flammable Liquid 3.1 Packing Group: II
PIN Number: UN1863 Guide Number: 120

Please be aware that other regulations may apply.

TELEPHONE NUMBERS

Emergency 24 hr. (519) 339-2145
Technical Info. (800) 268-3183

MANUFACTURER/SUPPLIER:

IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(416) 968-4111

2. REGULATED COMPONENTS

The following components are defined in accordance with sub-paragraph 13(a) (i) to (iv) or paragraph 14(a) of the Hazardous Products Act:

NAME	%	CAS #	
Kerosene, straight run	40-70 v/v	8008-20-6	LD50: > 5g/kg,oral,rat
Naphtha, full range	30-60 v/v	64741-42-0	
Ethylene Glycol Monomethyl Ether	0-0.15 v/v	109-86-4	LD50:2.4g/kg,orl,rat LD50:0.8g/kg,orl,rab
Diethylene Glycol Monomethyl Ether	0-0.15 v/v	111-77-3	LD50:8.2g/kg,orl,rat LD50:0.6g/kg,skn,rbt

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: not available
Viscosity: 0.60 cSt at 40 deg C
Vapour Density: 4
Boiling Point: 40 to 243 deg C
Evaporation rate: < 1 (1 = n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: -53 deg C less than
Odour Threshold: not available
Vapour Pressure: 21 kPa at 38 deg C
Density: 0.78 g/cc at 15 deg C
Appearance/odour: White or pale yellow liquid, petroleum odour

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
High vapour concentrations are irritating to the eyes, nose, throat and lungs; may cause headaches and dizziness; may be anesthetic and may cause other central nervous system effects.
Avoid breathing vapours or mists.

EYE CONTACT:

Slightly irritating, but will not injure eye tissue

SKIN CONTACT:

Irritating.
Frequent or prolonged contact may irritate the skin and cause a skin rash (dermatitis).
Low toxicity.

INGESTION:

Low toxicity.
Small amounts of this liquid drawn into the lungs from swallowing or vomiting may cause severe health effects (e.g. bronchopneumonia or pulmonary edema).

CHRONIC:

May contain ethylene glycol monomethyl ether (EGME). Prolonged and/or repeated exposure through inhalation or extensive skin contact with EGME may result in toxic effects on the blood, the blood producing system, the kidneys, the male reproductive system and the embryo/fetus.
Contains benzene. Human health studies (epidemiology) indicate that prolonged and/or repeated overexposures to benzene may cause damage to the blood producing system and serious blood disorders, including leukemia.
Animal tests suggest that prolonged and/or repeated overexposures to benzene may damage the embryo/fetus. The relationship of these animal studies to humans has not been fully established.
Contains n-hexane. Prolonged and/or repeated exposures may cause damage to the peripheral nervous system (e.g. fingers, feet, arms etc.).
Contains diethylene glycol monomethyl ether (DIEGME). Prolonged and repeated exposure through inhalation or extensive skin contact with DIEGME may result in toxic effects on the kidneys, the reproductive system and/or the embryo/fetus.

ACUTE TOXICITY DATA:

Based on animal testing data from similar materials and products, the acute toxicity of this product is expected to be:
Oral : LD50 > 5000 mg/kg (Rat)
Dermal : LD50 > 2000 mg/kg (Rabbit)
Inhalation : LC50 > 2500 mg/m3 (Rat)

OCCUPATIONAL EXPOSURE LIMIT:

Manufacturer recommends:
100 ppm based on composition.
For Benzene (skin) 1) 5 ppm TWA for 8 hrs/day 2) 3 ppm TWA for 12 hrs/day 3) 250 ppm minutes for 5 to 30 minutes.

ACGIH recommends:
For n-Hexane, 50 ppm (180 mg/m3).
For Benzene, the ACGIH recommends a TLV of 10 ppm (30 mg/m3), and describes it as a substance of suspect carcinogenic potential in man.
For 2-Methoxyethanol, (skin) 5 ppm (16 mg/m3).

Local regulated limits may vary.

5. FIRST AID MEASURES

INHALATION:

In emergency situations use proper respiratory protection to immediately remove the affected victim from exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:

Immediately flush with large amounts of water. Use soap if available. Remove contaminated clothing, including shoes, after flushing has begun. If irritation persists, seek medical attention.

Please turn over

INGESTION:

DO NOT induce vomiting since it is important that no amount of the material should enter the lungs (aspiration). Keep at rest. Get prompt medical attention.

6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use.
Where prolonged and/or repeated skin and eye contact is likely to occur, wear safety glasses with side shields, long sleeves, and chemical resistant gloves.
Where skin and eye contact is unlikely, but may occur as a result of short and/or periodic exposures, wear long sleeves and safety glasses with side shields.
Where concentrations in air may exceed the occupational exposure limits given in Section 4 and where engineering, work practices or other means of exposure reduction are not adequate, approved respirators may be necessary to prevent overexposure by inhalation.

ENGINEERING CONTROLS:

The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces.
Use explosion-proof ventilation equipment.

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care.
Store in a cool, well ventilated place away from incompatible materials.
In keeping with good personal hygiene practices, wash hands thoroughly after handling the material.
Store and load at normal (up to 38 deg C) temperature and at atmospheric pressure.
Material will accumulate static charges which may cause a spark. Static charge build-up could become an ignition source. Use proper relaxation and grounding procedures.
Empty containers may contain product residue. Do not pressurize, cut, heat, or weld empty containers. Do not reuse empty containers without commercial cleaning or reconditioning.

LAND SPILL:

Eliminate source of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard.
Vapours or dust may be harmful or fatal. Warn occupants of downwind areas.
Prevent spills from entering sewers, watercourses or low areas. Contain spilled liquid with sand or earth. Do not use combustible materials such as sawdust.
Recover by pumping (use an explosion proof motor or hand pump), or by using a suitable absorbent.
Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately.
Take all additional action necessary to prevent and remedy the adverse effects of the spill.

WATER SPILL:

Eliminate all sources of ignition. Vapours or dust may be harmful or fatal. Warn occupants and shipping in downwind areas.
Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately.
Take all additional action necessary to prevent and remedy the adverse effects of the spill.

7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: -18 deg C COC D92

Autoignition: NA Flammable Limits: LEL: 0.6% UEL: 8.0%

GENERAL HAZARDS:

Extremely flammable; material will readily ignite at normal temperatures.
Flammable Liquid; may release vapours that form flammable mixtures at or above the flash point.
Toxic gases will form upon combustion.
Static Discharge; material may accumulate static charges which may cause a fire.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel.
Shut off fuel to fire if possible to do so without hazard. If a leak or spill has not ignited use water spray to disperse the vapours.
Either allow fire to burn out under controlled conditions or extinguish with foam or dry chemical. Try to cover liquid spills with foam.
Respiratory and eye protection required for fire fighting personnel.
Avoid spraying water directly into storage containers due to danger of boilover.
A self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA may not be required.

HAZARDOUS COMBUSTION PRODUCTS:

Smoke, carbon monoxide, carbon dioxide

8. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID:

Strong oxidizing agents.

HAZARDOUS DECOMPOSITION:

none

9. NOTES

10. PREPARATION

Date Prepared : May 18, 1995
Prepared by: LUBRICANTS AND SPECIALTIES
IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(800) 268-3183

MSDS

Canadian Centre for Occupational Health and Safety

Issue : 97-1 (February, 1997)

*** IDENTIFICATION ***

MSDS RECORD NUMBER : 1314587
PRODUCT NAME(S) : TURBINE FUEL AVIATION, WIDE CUT TYPE
ESSO JET B
ESSO TURBO FUEL B
JET B
TURBO FUEL B
TURBO FUEL B F40
TURBO FUEL B JP4
PRODUCT IDENTIFICATION : MSDS Number : 000110
DATE OF MSDS : 1995-05-18

*** MANUFACTURER INFORMATION ***

MANUFACTURER : Imperial Oil (Products Division)
ADDRESS : 111 St Clair Avenue West
Toronto Ontario
Canada M5W 1K3
Telephone: 416-968-4111

*** SUPPLIER/DISTRIBUTOR INFORMATION ***

SUPPLIER/DISTRIBUTOR : Imperial Oil (Products Division)
ADDRESS : 111 St Clair Avenue West
Toronto Ontario
Canada M5W 1K3
Telephone: 416-968-4111

*** MATERIAL SAFETY DATA ***

Date Prepared: May 18, 1995
Supersedes: April 13, 1994
MSDS Number : 000110

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1. PRODUCT INFORMATION

Product Identifier: TURBINE FUEL AVIATION, WIDE CUT TYPE
ESSO JET B
ESSO TURBO FUEL B
JET B
TURBO FUEL B
TURBO FUEL B F40
TURBO FUEL B JP4

Application and Use:
Naphtha-kerosene blended aviation fuel for turbine-powered aircraft

A mixture of aliphatic and aromatic hydrocarbons and additives.

REGULATORY CLASSIFICATION

WHMIS:
Class B, Division 2: Flammable Liquids.
Class D, Division 2, Subdivision A: Very Toxic Material.
Class D, Division 2, Subdivision B: Toxic Material

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT
All components of this product are either on the Domestic Substances List (DSL) or are exempt.

TRANSPORTATION OF DANGEROUS GOODS INFORMATION

Shipping Name: Fuel, Aviation, Turbine Engine
Class: Flammable Liquid 3.1 Packing Group: II
PIN Number: UN1863 Guide Number: 120

Please be aware that other regulations may apply.

TELEPHONE NUMBERS

Emergency 24 hr. (519) 339-2145
Technical Info. (800) 268-3183

MANUFACTURER/SUPPLIER:

IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(416) 968-4111

2. REGULATED COMPONENTS

The following components are defined in accordance with sub-paragraph 13(a (i) to (iv) or paragraph 14(a) of the Hazardous Products Act:

NAME	%	CAS #	
Kerosene, straignt run	40-70 V/V	8008-20-6	LD50:>5g/kg,oral,rat
Naphtha, full range	30-60 V/V	64741-42-0	
Ethylene Glycol Monomethyl Ether	0-0.15 V/V	109-86-4	LD50:2.4g/kg,orl,rat LD50:0.8g/kg,orl,rab
Diethylene Glycol Monomethyl Ether	0-0.15 V/V	111-77-3	LD50:9.2g/kg,orl,rat LD50:0.6g/kg,skn.rbt

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Specific gravity: not available
Viscosity: 0.50 cSt at 40 deg C
Vapour Density: 4
Boiling Point: 40 to 243 deg C
Evaporation rate: <1 (1= n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: -53 deg C less than
Odour Threshold: not available
Vapour Pressure: 21 kPa at 38 deg C
Density: 0.78 g/cc at 15 deg C
Appearance/odour: White or pale yellow liquid, petroleum odour

---

HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
High vapour concentrations are irritating to the eyes, nose, throat and lungs; may cause headaches and dizziness; may be anesthetic and may cause other central nervous system effects.
Avoid breathing vapours or mists.

EYE CONTACT:

Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:

Irritating.
Frequent or prolonged contact may irritate the skin and cause a skin rash (dermatitis).
Low toxicity.

INGESTION:

Low toxicity.
Small amounts of this liquid drawn into the lungs from swallowing or vomiting may cause severe health effects (e.g. bronchopneumonia or pulmonary edema)

CHRONIC:

May contain ethylene glycol monomethyl ether (EGME). Prolonged and/or repeated exposure through inhalation or extensive skin contact with EGME may result in toxic effects on the blood, the blood producing system, the kidneys, the male reproductive system and the embryo/fetus.
Contains benzene. Human health studies (epidemiology) indicate that prolonged and/or repeated overexposures to benzene may cause damage to the blood producing system and serious blood disorders, including leukemia.
Animal tests suggest that prolonged and/or repeated overexposures to benzene may damage the embryo/fetus. The relationship of these animal

Contains n-hexane. Prolonged and/or repeated exposures may cause damage to the peripheral nervous system (e.g. fingers, feet, arms etc.). Contains diethylene glycol monomethyl ether (DIEGME). Prolonged and repeated exposure through inhalation or extensive skin contact with DIEGME may result in toxic effects on the kidneys, the reproductive system and/or the embryo/fetus.

ACUTE TOXICITY DATA:

Based on animal testing data from similar materials and products, the acute toxicity of this product is expected to be:

Oral	:	LD50 > 5000 mg/kg (Rat)
Dermal	:	LD50 > 2000 mg/kg (Rabbit)
Inhalation	:	LC50 > 2500 mg/m3 (Rat)

OCCUPATIONAL EXPOSURE LIMIT:

Manufacturer recommends:
100 ppm based on composition.
For Benzene (skin) 1) 5 ppm TWA for 8 hrs/day 2) 3 ppm TWA for 12 hrs/day 3) 250 ppm minutes for 5 to 30 minutes.

ACGIH recommends:
For n-Hexane, 50 ppm (180 mg/m3).
For Benzene, the ACGIH recommends a TLV of 10 ppm (30 mg/m3), and describes it as a substance of suspect carcinogenic potential in man.
For 2-Methoxyethanol, (skin) 5 ppm (16 mg/m3).

Local regulated limits may vary.

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5. FIRST AID MEASURES

INHALATION:

In emergency situations use proper respiratory protection to immediately remove the affected victim from exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for prompt medical attention.

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides. If irritation persists, get medical attention.

SKIN CONTACT:

Immediately flush with large amounts of water. Use soap if available. Remove contaminated clothing, including shoes, after flushing has begun. If irritation persists, seek medical attention.

INGESTION:

DO NOT induce vomiting since it is important that no amount of the material should enter the lungs (aspiration). Keep at rest. Get

6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use.
Where prolonged and/or repeated skin and eye contact is likely to occur, wear safety glasses with side shields, long sleeves, and chemical resistant gloves.
Where skin and eye contact is unlikely, but may occur as a result of short and/or periodic exposures, wear long sleeves and safety glasses with side shields.
Where concentrations in air may exceed the occupational exposure limits given in Section 4 and where engineering, work practices or other means of exposure reduction are not adequate, approved respirators may be necessary to prevent overexposure by inhalation.

ENGINEERING CONTROLS:

The use of local exhaust ventilation is recommended to control emissions near the source. Laboratory samples should be handled in a fumehood. Provide mechanical ventilation of confined spaces.
Use explosion-proof ventilation equipment.

HANDLING, STORAGE AND SHIPPING:

Keep containers closed. Handle and open containers with care.
Store in a cool, well ventilated place away from incompatible materials.
In keeping with good personal hygiene practices, wash hands thoroughly after handling the material.
Store and load at normal (up to 38 deg C) temperature and at atmospheric pressure.
Material will accumulate static charges which may cause a spark. Static charge build-up could become an ignition source. Use proper relaxation an grounding procedures.
Empty containers may contain product residue. Do not pressurize cut, heat, or weld empty containers. Do not reuse empty containers without commercial cleaning or reconditioning.

LAND SPILL:

Eliminate source of ignition. Keep public away. Prevent additional discharge of material, if possible to do so without hazard.
Vapours or dust may be harmful or fatal. Warn occupants of downwind areas.
Prevent spills from entering sewers, watercourses or low areas. Contain spilled liquid with sand or earth. Do not use combustible materials such as sawdust.
Recover by pumping (use an explosion proof motor or hand pump), or by using a suitable absorbent.
Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately.

effects of the spill.

WATER SPILL:

Eliminate all sources of ignition. Vapours or dust may be harmful or fatal. Warn occupants and shipping in downwind areas.
Consult an expert on disposal of recovered material. Ensure disposal in compliance with government requirements and ensure conformity to local disposal regulations. Notify the appropriate authorities immediately.
Take all additional action necessary to prevent and remedy the adverse effects of the spill.

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7. FIRE AND EXPLOSION HAZARD

Flashpoint and method: -18 deg C COC D92

Autoignition: NA Flammable Limits: LEL: 0.6% UEL: 8.0%

GENERAL HAZARDS:

Extremely flammable; material will readily ignite at normal temperatures.
Flammable Liquid; may release vapours that form flammable mixtures at or above the flash point.
Toxic gases will form upon combustion.
Static Discharge; material may accumulate static charges which may cause a fire.

FIRE FIGHTING:

Use water spray to cool fire exposed surfaces and to protect personnel.
Shut off fuel to fire if possible to do so without hazard. If a leak or spill has not ignited use water spray to disperse the vapours.
Either allow fire to burn out under controlled conditions or extinguish with foam or dry chemical. Try to cover liquid spills with foam.
Respiratory and eye protection required for fire fighting personnel.
Avoid spraying water directly into storage containers due to danger of boilover.
A self-contained breathing apparatus (SCBA) should be used for all indoor fires and any significant outdoor fires. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA may not be required.

HAZARDOUS COMBUSTION PRODUCTS:

Smoke, carbon monoxide, carbon dioxide

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8. REACTIVITY DATA

STABILITY:

This product is stable. Hazardous polymerization will not occur.

Strong oxidizing ag ts

HAZARDOUS DECOMPOSITION:

none

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10. PREPARATION

Date Prepared: May 18, 1995
Prepared by: LUBRICANTS AND SPECIALTIES
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