APPENDIX 3

MSDS SHEETS FOR PRODUCTS WHICH MAY BE USED IN A CAMP SETTING

(Includes Diesel, Aviation Turbine Fuel [Jet B], Petrol (Unleaded Gasoline), Av-Gas, Propane, Oils, Solvents, Antifreeze, Oxygen, Acetylene, Batteries)

EXIDE CORPORATION

I. PRODUCT IDENTIFICATION

MANUFACTURER
Exide Corporation
P.O. Box 14205
Reading, PA 19612-4205

FOR INFORMATION
(610) 378-0500
Environmental Resources Dept.

FOR EMERGENCY
CHEMTREC (800) 424-9300
24-hour Emergency Response Contact
Ask for Environmental Coordinator

CHEMICAL/TRADE NAME (as used on label): Lead-Acid Battery

CHEMICAL FAMILY/ CLASSIFICATION: Electric Storage Battery

DATE REVISED: MAR 24/2000

II. HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Components	CAS Number	% by Wt.	Approximate Air Exposure Limits (ug/m³) OSHA	ACGIH	NIOSH
Inorganic compounds of:					
Lead	7439-92-1	53	50	150	100
Antimony	7440-36-0	0.2	500	500	--
Arsenic	7440-38-2	0.003	10	200	--
Calcium	7440-70-2	0.02	--	--	--
Tin	7440-31-5	0.06	2000	2000	--
Electrolyte (sulfuric acid/water/solution)	7664-93-9	30-40	1000	1000	100
Case Material: Polypropylene	9003-07-0	5-6	N/A	N/A	N/A
Hard Rubber	--				
Other: Silicon dioxide (gel cell batteries only)	60676-86-0	3-5	N/A	N/A	N/A

NOTE: Inorganic lead and electrolyte (water and sulfuric acid solution) are the primary components of every battery manufactured by Exide Corporation or its subsidiaries. Other ingredients may be present dependent upon battery type. Polypropylene is the principal case material of automotive and commercial batteries.

III. PHYSICAL DATA - ELECTROLYTE

Boiling Point	203°F-240°F (for S.G. range)	Specific Gravity (H_2O=1)	1.230 to 1.350
Melting Point	Not Applicable	Vapor Pressure (mm Hg)77°F	17 to 11 (for S.G. range)
Solubility in Water	100%		
Evaporation Rate (Butyl acetate=1)	Less Than 1	Vapor Density (AIR=1)	Greater than 1
Appearance and Odor	A clear liquid with a sharp, penetrating, pungent odor. A battery is a manufactured article; no apparent odor.	% Volatiles by Weight	Not Applicable

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point:	Not Applicable
Flammable Limits:	LEL = 4.1% (Hydrogen Gas in air) UEL = 74.2%
Extinguishing media:	CO_2; foam; dry chemical

Special Fire Fighting Procedures: Use positive pressure, self-contained breathing apparatus. Beware of acid splatter during wate application and wear acid-resistant clothing, gloves, face and eye protection. If batteries are on charge, shut off power to the charging equipment, but, note that strings of series connected batteries may still pos risk of electric shock even when charging equipment is shut down.

Unusual Fire and Explosion hazards: In operation, batteries generate and release flammable hydrogen gas. They must always be assumed to contain this gas which, if ignited by burning cigarette, naked flame or spark, may cause battery explosion with dispersion of casing fragments and corrosive liquid electrolyte. Carefully follow manufacturer's instructions for installation and service. Keep away all sources of gas ignition and do not allow metallic articles to simultaneously contact the negative and positive terminals of a battery.

V. REACTIVITY DATA

Stability: Stable X
Unstable ____

Conditions to Avoid: Prolonged overcharge at high current; sources of ignition.

Incompatibility: (materials to avoid)

Electrolyte (Water and Sulfuric Acid Solution): Contact with combustibles and organic materials may cause fire and explosion. Also reacts violently with strong reducing agents, metals, sulfur trioxide gas, strong oxidizers and water. Contact with metals may produce toxic sulfur dioxide fumes and may release flammable hydrogen gas.

Lead compounds: Avoid contact with strong acids, bases, halides, halogenates, potassium nitrate, permanganate, peroxides, nascent hydrogen and reducing agents.

Hazardous Decomposition Products:

Electrolyte (Water and Sulfuric Acid Solution): Sulfur trioxide, carbon monoxide, sulfuric acid mist, sulfur dioxide, hydrogen.

Lead compounds: Temperatures above the melting point are likely to produce toxic metal fume, vapor or dust; contact with strong acid or base or presence of nascent hydrogen may generate highly toxic arsine gas.

VI. HEALTH HAZARD DATA

Routes of Entry:

Electrolyte (Water and Sulfuric Acid Solution): Harmful by all routes of entry.

Lead compounds: Hazardous exposure can occur only when product is heated above the melting point, oxidized or otherwise processed or damaged to create dust, vapor or fume.

Inhalation:

Electrolyte (Water and Sulfuric Acid Solution): Breathing of sulfuric acid vapors or mists may cause severe respiratory irritation.

Lead compounds: Inhalation of lead dust or fumes may cause irritation of upper respiratory tract and lungs.

VI. HEALTH HAZARD DATA (CONTINUED)

Ingestion:

Electrolyte (Water and Sulfuric Acid Solution): May cause severe irritation of mouth, throat, esophagus and stomach.

Lead compounds: Acute ingestion may cause abdominal pain, nausea, vomiting, diarrhea and severe cramping. This may lead rapidly to systemic toxicity.

Skin Contact:

Electrolyte (Water and Sulfuric Acid Solution): Severe irritation, burns and ulceration.

Lead compounds: Not absorbed through the skin.

Eye Contact:

Electrolyte (Water and Sulfuric Acid Solution): Severe irritation, burns, cornea damage, blindness.

Lead compounds: May cause eye irritation.

Effects of Overexposure - Acute:

Electrolyte (Water and Sulfuric Acid Solution): Severe skin irritation, damage to cornea may cause blindness, upper respiratory irritation.

Lead compounds: Symptoms of toxicity include headache, fatigue, abdominal pain, loss of appetite, muscular aches and weakness, sleep disturbances and irritability.

Effects of Overexposure - Chronic:

Electrolyte (Water and Sulfuric Acid Solution): Possible erosion of tooth enamel; inflammation of nose, throat and bronchial tubes.

Lead compounds: Anemia; neuropathy, particularly of the motor nerves, with wrist drop; kidney damage; reproductive changes in both males and females.

Carcinogenicity:

Electrolyte (Water and Sulfuric Acid Solution): The International Agency for Research on Cancer (IARC) has classified "strong inorganic acid mist containing sulfuric acid" as a Category I carcinogen, a substance that is carcinogenic to humans. This classification does not apply to sulfuric acid solutions in static liquid state or to electrolyte in batteries. Batteries subjected to abusive charging at excessively high currents for prolonged periods of time without vent caps in place may create a surrounding atmosphere of the offensive strong inorganic acid mist containing sulfuric acid.

Lead compounds: Listed as a 2B carcinogen, likely in animals at extreme doses. Proof of carcinogenicity in humans is lacking at present.

Arsenic: Listed by National Toxicology Program (NTP), International Agency for Research on Cancer (IARC), OSHA and NIOSH as a carcinogen only after prolonged exposure at high levels.

Medical Conditions Generally Aggravated by Exposure:

Overexposure to sulfuric acid mist may cause lung damage and aggravate pulmonary conditions. *Contact of electrolyte* (water and sulfuric acid solution) with skin may aggravate skin diseases such as eczema and contact dermatitis. Contact of electrolyte (water and sulfuric acid solution) with eyes may damage cornea and/or cause blindness. Lead and its compounds can aggravate some forms of kidney, liver and neurologic diseases.

VI. HEALTH HAZARD DATA (CONTINUED)

Emergency and First Aid Procedures:

Inhalation:

Electrolyte (Water and Sulfuric Acid Solution): Remove to fresh air immediately. If breathing is difficult, give oxygen.

Lead: Remove from exposure, gargle, wash nose and lips; consult physician.

Ingestion:

Electrolyte (Water and Sulfuric Acid Solution): Give large quantities of water; do not induce vomiting; consult physician.

Lead: Consult physician immediately.

Skin:

Electrolyte (Water and Sulfuric Acid Solution): Flush with large amounts of water for at least 15 minutes; remove contaminated clothing completely, including shoes.

Lead: Wash immediately with soap and water.

Eyes:

Electrolyte (Water and Sulfuric Acid Solution) and lead: Flush immediately with large amounts of water for at least 15 minutes; consult physician immediately.

VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Handling and Storage:

Store batteries under roof in cool, dry, well-ventilated areas which are separated from incompatible materials and from activities which may create flames, sparks or heat. Store on smooth, impervious surfaces which are provided with measures for liquid containment in the event of electrolyte spills. Keep away from metallic objects which could bridge the terminals on a battery and create a dangerous short-circuit. Handle carefully and avoid tipping, which may allow electrolyte leakage. Single batteries pose no risk of electric shock but there may be increasing risk of electric shock from strings of connected batteries exceeding three 12-volt units.

Charging:

There is a possible risk of electric shock from charging equipment and from strings of series connected batteries, whether being charged or not. Shut-off power to chargers whenever not in use and before detachment of any circuit connections. Batteries being charged will generate and release flammable hydrogen gas. Charging space should be ventilated. Keep battery vent caps in position. Prohibit smoking and avoid creation of flames and sparks nearby. Wear face and eye protection when near batteries being charged.

Spill or Leak Procedures:

Stop flow of material, contain/absorb small spills with dry sand, earth, vermiculite. Do not use combustible materials. If possible, carefully neutralize spilled electrolyte with soda ash, sodium bicarbonate, lime, etc. Wear acid-resistant clothing, boots, gloves, and face shield. Do not allow discharge of unneutralized acid to sewer. Neutralized acid must be managed in accordance with approved local, state and federal requirements. Consult state environmental agency and/or federal EPA.

VII. PRECAUTIONS FOR SAFE HANDLING AND USE (CONTINUED)

Waste Disposal Methods:

Spent batteries: Send to secondary lead smelter for recycling.

Electrolyte:

Place neutralized slurry into sealed acid resistant containers and dispose of as hazardous waste, as applicable. Large water-diluted spills, after neutralization and testing, should be managed in accordance with approved local, state and federal requirements. Consult state environmental agency and/or federal EPA.

Precautionary Labelling:

POISON - CAUSES SEVERE BURNS

DANGER - EXPLOSIVE GASES

CORROSIVE - CONTAINS SULFURIC ACID

KEEP AWAY FROM CHILDREN

VIII. CONTROL MEASURES

Engineering Controls:

Store and handle in well-ventilated area. If mechanical ventilation is used, components must be acid-resistant.

Work Practices:

Handle batteries cautiously, do not tip to avoid spills. Make certain vent caps are on securely. Avoid bodily contact with internal components. Wear protective clothing, eye and face protection, when filling or handling batteries.

Respiratory Protection:

None required under normal conditions. When concentrations of sulfuric acid mist are known to exceed PEL, use NIOSH or MSHA-approved respiratory protection.

Protective gloves:

Rubber or plastic acid-resistant gloves with elbow-length gauntlet.

Eye Protection:

Chemical goggles or face shield.

Other Protection:

Acid-resistant apron. Under severe exposure or emergency conditions, wear acid-resistant clothing, gloves and boots.

Emergency Flushing:

In areas where water and sulfuric acid solutions are handled in concentrations greater than 1%, emergency eyewash stations and showers should be provided, with unlimited water supply.

MATERIAL SAFETY DATA SHEET

Date Prepared: November 03, 1994
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

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) 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 #	
Gasoline	> 99 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.
Contains small amounts of methylcyclopentadienyl manganese tricarbonyl (MMT), benzene and n-hexane. MMT may cause nervous system, liver and kidney effects. Benzene may cause blood and/or the blood producing system disorder and/or damage; n-hexane may cause peripheral (e.g. fingers, feet, arms etc.) nerve damage. In high concentrations gasoline components may cause central nervous system disorders.

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.)

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 gasoline, 100 ppm (300 mg/m3).
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.
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.

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.

Please turn over

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: 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 #	
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

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
COMMERCIAL MARINE DIESEL FUEL
DIESEL FUEL (DYED OR CLEAR)
DIESEL FUEL FOR EPC REFUELLING
DIESEL QUALITY FURNACE FUEL (DYED OR CLEAR)
DIESEL QUALITY HEATING OIL (DYED OR CLEAR)
ESSO COMMERCIAL FUEL (DYED OR CLEAR)
ESSO DIESEL FUEL
ESSO DIESEL FUEL LS
ESSO DIESEL QUALITY COMMERCIAL FUEL (DYED OR CLEAR)
ESSO DIESEL QUALITY FURNACE FUEL
ESSO DIESEL QUALITY HEATING OIL
ESSO FURNACE FUEL (DYED OR CLEAR)
ESSO FURNACE OIL (DYED OR CLEAR)
ESSO HEATING OIL (DYED OR CLEAR)
ESSO MARINE DIESEL FUEL (DYED OR CLEAR)
ESSO MARINE GAS OIL (DYED OR CLEAR)
ESSO RAILROAD DIESEL (DYED OR CLEAR)
ESSO RAILROAD DIESEL FUEL
ESSO RAILROAD DIESEL FUEL #3 (DYED OR CLEAR)
ESSO TOBACCO CURING OIL
ESSO 3-GP-11M
ESSO 3-GP-15M
FUEL OIL 75
FUEL OIL 76
FURNACE FUEL (DYED OR CLEAR)
FURNACE FUEL OIL (DYED OR CLEAR)
HEATING OIL (DYED OR CLEAR)
IRVING LOW SULFUR DIESEL FUEL
LOW SULFUR DIESEL
LOW SULFUR DIESEL, (EXPORT (DYED)
MARINE DIESEL (DYED OR CLEAR)
MARINE DIESEL - POUR DEPRESSED (DYED OR CLEAR)
MARINE GAS OIL (DYED OR CLEAR)
NAVAL FUEL OIL 3-GP-11M (DYED)
NO.2 FUEL 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.

Please turn over

Esso Imperial Oil — MATERIAL SAFETY DATA SHEET

Date Prepared October 31, 1995
Supersedes April 4, 1994
MSDS Number 360040

Cette fiche signalétique est aussi disponible en français

1. PRODUCT INFORMATION

Product Identifier ESSO HD ANTIFREEZE (GM6038M)

Application and Use
Engine antifreeze coolant

Product Description

A glycol type antifreeze

REGULATORY CLASSIFICATION

WHMIS:

Class D, Division 2, Subdivision A: Very 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: Compounds, Anti-Freeze
Class: Not regulated — Packing Group: Not regulated
PIN Number: Not regulated — Guide Number: 134

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 #	
Monoethylene Glycol	90-90 v/v	107-21-1	LD50:8.5g/kg,orl,rat LD50:19g/kg,skn,rbt

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: not available
Viscosity: > 19.10 cSt at 20 deg C
Vapour Density: not available
Boiling Point: 166 deg C
Evaporation rate: < 1 (1 = n-butylacetate)
Solubility in water: 100.00%
Freezing/Pour Point: not available
pH: 11.0
Odour Threshold: not available
Vapour Pressure: < 1 kPa at 38 deg C
Density: 1.11 g/cc at 16 deg C
Appearance/odour: A green coloured liquid, with a sweet smell.

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
Elevated temperatures or mechanical action may form vapours, mists or fumes which may be irritating to the eyes, nose, throat and lungs.
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.

INGESTION:

Moderately toxic

CHRONIC:

Contains ethylene glycol (EG). Repeated high dose exposure to EG by ingestion (animal studies) has caused kidney damage, brain damage, degeneration of the liver, changes in blood chemistry and circulating blood cells. Prolonged and/or repeated exposures may cause similar effects in humans.
Ethylene glycol has been shown to cause developmental and reproductive effects at high dose levels in laboratory animals. The relationship of these results to humans has not been fully established.

This product contains Diethylene Glycol (DEG). Prolonged and repeated exposure through ingestion of DEG may result in toxic effects on the kidney.

ACUTE TOXICITY DATA:

Based on animal and human testing data from similar materials and products, the acute toxicity of this product is expected to be:
Oral: LD50 > 1300 mg/kg (human)
LD50 > 8500 mg/kg (rat)

OCCUPATIONAL EXPOSURE LIMIT:

Manufacturer recommends:
For diethylene glycol, the Supplier recommends an exposure limit of 10 mg/m3 (aerosol) and 50 ppm (total), based upon the AIHA WEEL.

ACGIH recommends:
For Ethylene Glycol aerosol, a ceiling limit of 39.4 ppm (100 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 before reuse.
If irritation persists, seek medical attention.

INGESTION:

If swallowed, induce vomiting only if victim is conscious.
Get prompt medical attention. DO NOT attempt to give anything by mouth to an unconscious person.

6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use.
In open systems where contact is likely, wear safety goggles, chemical-resistant overalls, and chemically impervious gloves.
Where only incidental contact is likely, wear safety glasses with side shields. No other special precautions are necessary provided skin/eye contac is avoided.
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.

Please turn over

MATERIAL SAFETY DATA SHEET

Date Prepared April 13, 1994
Supersedes March 9, 1994
MSDS Number 000107

Cette fiche signalétique est aussi disponible en français

1. PRODUCT INFORMATION

Product Identifier AVIATION GASOLINE
AVIATION GASOLINE 100LL
ESSO AVIATION GASOLINE 100LL

Application and Use
Aviation fuel for Piston derived aircraft engines

FOR AVIATION USE ONLY

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.

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: 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) 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 #	
Gasoline	> 99 v/v	8006-61-9	LD50 > 18ml/kg,orl,rat LD50 > 5ml/kg,skn,rbt
Tetraethyl Lead	< 1 v/v	78-00-2	LD50 < .02g/Kg,ing,rat LD50 < .02g/Kg,skn,rat LC50:6,ppm,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 170 deg C
Evaporation rate: > 1 (1 = n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: -58 deg C less than
Odour Threshold: not available
Vapour Pressure 38 kPa to 48 kPa at 38 deg C
Density: 0.70 g/cc at 15 deg C
Appearance/odour: Blue liquid , 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
Contains small amounts of tetraalkyl lead, benzene and n-hexane.
Benzene may cause blood and/or blood producing system disorder and/or damage; n-hexane may cause peripheral (e.g. fingers, feet, arms, etc.) nerve damage. In high concentrations gasoline may cause central nervous system disorders

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.)
Contains organic lead. Prolonged and/or repeated exposures may cause damage to the central nervous system, brain injury resulting in behavioral changes, and reproductive system effects.

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) 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 Gasoline, 300 ppm (900 mg/m3)
For n-Hexane, 50 ppm (180 mg/m3).
For Tetraethyl Lead, (skin), 0.1 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.

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 before reuse.
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.

Please turn over

MATERIAL SAFETY DATA SHEET

Esso

ate Prepared May 03, 1994
upersedes: August 9, 1989
MSDS Number: 229738

Cette fiche signalétique est aussi disponible en français

1. PRODUCT INFORMATION

Product Identifier: EASYMIX

Application and Use:
Premium quality low ash engine oil for use in most air-cooled, two-cycle engines

Product Description:

A mixture of refined petroleum lubricant basestocks and petroleum solvent plus additives

REGULATORY CLASSIFICATION

WHMIS:

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: Petroleum Oil
Class: Flammable Liquid 3.3 Packing Group: III
PIN Number: UN1270 Guide Number: 109

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 #
Light Hydrotreated Distillate	10-30 v/v	8052-41-3

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: not available
Viscosity: 33.40 cSt at 40 deg C
Vapour Density: not available
Boiling Point: 150 to 615 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: 4.2 kPa at 20 deg C
Density: 0.90 g/cc at 15 deg C
Appearance/odour: Dark blue oil, petroleum odour.

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
Elevated temperatures or mechanical action may form vapours, mists or fumes which may be irritating to the eyes, nose, throat and lungs.
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.

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:

ACGIH recommends:
For oil mists, 5 mg/m3.
For Stoddard Solvent, 100 ppm (525 mg/m3).

Local regulated limits may vary.

5. FIRST AID MEASURES

INHALATION:

Vapour pressure of this material is low and as such inhalation under normal conditions is usually not a problem. If overexposed to oil mist, remove from further 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 before reuse.
If irritation persists, seek medical attention.

INGESTION:

If swallowed, DO NOT induce vomiting. 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 eye contact is unlikely, but may occur as a result of short and/or periodic exposures, wear 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.
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.

Please turn over

MATERIAL SAFETY DATA SHEET

Esso

ate Prepared: May 03, 1994
upersedes: April 06, 1993
MSDS Number: 229760

Cette fiche signalétique est aussi disponible en français

1. PRODUCT INFORMATION

Product Identifier: ESSO SNOWMOBILE OIL

Application and Use:
Premium quality low ash engine oil for use in air and liquid-cooled, premixed and oil injected, snowmobile engines

Product Description:

A mixture of refined petroleum lubricant basestocks and petroleum solvent plus additives

REGULATORY CLASSIFICATION

WHMIS:

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: Petroleum Oil
Class: Flammable Liquid 3.3 Packing Group: III
PIN Number: UN1270 Guide Number: 109

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 #
Light Hydrotreated Distillate	10-30 v/v	8052-41-3

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: not available
Viscosity: 21.40 cSt at 40 deg C
Vapour Density: not available
Boiling Point: 150 to 615 deg C
Evaporation rate: < 1 (1 = n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: -45 deg C D97
Odour Threshold: not available
Vapour Pressure: 4.2 kPa at 20 deg C
Density: 0.88 g/cc at 15 deg C
Appearance/odour: Dark blue oil, petroleum odour.

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
Elevated temperatures or mechanical action may form vapours, mists or fumes which may be irritating to the eyes, nose, throat and lungs.
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.

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:

ACGIH recommends:
For oil mists, 5 mg/m3.
For Stoddard Solvent, 100 ppm (525 mg/m3).

Local regulated limits may vary.

5. FIRST AID MEASURES

INHALATION:

Vapour pressure of this material is low and as such inhalation under normal conditions is usually not a problem. If overexposed to oil mist, remove from further 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 before reuse.
If irritation persists, seek medical attention.

INGESTION:

If swallowed, DO NOT induce vomiting. 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 eye contact is unlikely, but may occur as a result of short and/or periodic exposures, wear 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.
Do not breathe gas, vapour or mist.
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.

Please turn over

MATERIAL SAFETY DATA SHEET

Date Prepared May 18, 1995
Supersedes April 07, 1994
MSDS Number 000112

Cette fiche signalétique est aussi disponible en français

1. PRODUCT INFORMATION

Product Identifier HIGH FLASH TYPE TURBINE AVIATION FUEL
ESSO JET 5
ESSO TURBO FUEL 5
JET 5
TURBO FUEL 5
3GP-24M

Application and Use
High flash point aviation turbine fuel for on board Naval vessels

Product Description

A mixture of aliphatic and aromatic hydrocarbons and additives

REGULATORY CLASSIFICATION

WHMIS:

Class B, Division 3: Combustible 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 3.3 Packing Group: III
PIN Number. UN1863 Guide Number: 121

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	> 99 v/v	8008-20-6	LD50: > 5g/kg,oral,rat
Diethylene Glycol Monomethyl Ether	0-0.2 v/v	111-77-3	LD50:9.2g/kg,orl,rat LD50:0.6g/kg,skn,rbt

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: not available
Viscosity: 8.00 cSt at -20 deg C
Vapour Density: 4
Boiling Point: 140 to 290 deg C
Evaporation rate: < 1 (1 = n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: -46 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:

Low toxicity
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.

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.

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.

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

Please turn over

Esso Imperial Oil — MATERIAL SAFETY DATA SHEET

Date Prepared: October 31, 1995
Supersedes: April 4, 1994
MSDS Number: 360000

Cette fiche signalétique est aussi disponible en français

1. PRODUCT INFORMATION

Product Identifier: ESSO RAD

Application and Use:
Engine antifreeze coolant

Product Description:

A glycol type antifreeze

REGULATORY CLASSIFICATION

WHMIS:

Class D, Division 2, Subdivision A: Very 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: Compounds, Anti-Freeze
Class: Not regulated — Packing Group: Not regulated
PIN Number: Not regulated — Guide Number: 134

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 #	
Monoethylene Glycol	80-90 v/v	107-21-1	LD50:8.5g/kg,ort,rat LD50:19g/kg,skn,rbt

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: not available
Viscosity: > 19.10 cSt at 20 deg C
Vapour Density: not available
Boiling Point: 166 deg C
Evaporation rate: < 1 (1 = n-butylacetate)
Solubility in water: 100.00%
Freezing/Pour Point: not available
pH: 11.0
Odour Threshold: not available
Vapour Pressure: < 1 kPa at 38 deg C
Density: 1.11 g/cc at 16 deg C
Appearance/odour: A green coloured liquid, with a sweet smell.

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
Elevated temperatures or mechanical action may form vapours, mists or fumes which may be irritating to the eyes, nose, throat and lungs.
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

INGESTION:

Moderately toxic

CHRONIC:

Contains ethylene glycol (EG). Repeated high dose exposure to EG by ingestion (animal studies) has caused kidney damage, brain damage, degeneration of the liver, changes in blood chemistry and circulating blood cells. Prolonged and/or repeated exposures may cause similar effects in humans.
Ethylene glycol has been shown to cause developmental and reproductive effects at high dose levels in laboratory animals. The relationship of these results to humans has not been fully established.

This product contains Diethylene Glycol (DEG). Prolonged and repeated exposure through ingestion of DEG may result in toxic effects on the kidney.

ACUTE TOXICITY DATA:

Based on animal and human testing data from similar materials and products, the acute toxicity of this product is expected to be:
Oral: LD50 > 1300 mg/kg (human)
LD50 > 8500 mg/kg (rat)

OCCUPATIONAL EXPOSURE LIMIT:

Manufacturer recommends:
For diethylene glycol, the Supplier recommends an exposure limit of 10 mg/m3 (aerosol) and 50 ppm (total), based upon the AIHA WEEL.

ACGIH recommends:
For Ethylene Glycol aerosol, a ceiling limit of 39.4 ppm (100 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 before reuse.
If irritation persists, seek medical attention.

INGESTION:

If swallowed, induce vomiting only if victim is conscious.
Get prompt medical attention. DO NOT attempt to give anything by mouth to an unconscious person.

6. PREVENTIVE AND CORRECTIVE MEASURES

PERSONAL PROTECTION:

The selection of personal protective equipment varies, depending upon conditions of use.
In open systems where contact is likely, wear safety goggles, chemical-resistant overalls, and chemically impervious gloves.
Where only incidental contact is likely, wear safety glasses with side shields. No other special precautions are necessary provided skin/eye contact is avoided.
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.

Please turn over

MATERIAL SAFETY DATA SHEET

Esso

Date Prepared: May 10, 1994
Supersedes: June 20, 1993
MSDS Number: 027010

1. PRODUCT INFORMATION

Product Identifier: IMPERIAL TOLUENE

Application and Use:
Solvent, diluent, chemical feedstock, or fuel

Product Description:
Aromatic hydrocarbon.

CAS number: 108-88-3

REGULATORY CLASSIFICATION

WHMIS Information:
Class B, Division 2: Flammable Liquids
Class D, Division 2, Subdivision B: Toxic Material

TDG Information (Rail/Road):
PIN Number: UN 1294
Shipping Name: Toluene
Packing Group: II
Primary TDG: Class 3.2
Subsidiary TDG: Class 9.2

Canadian Environmental Protection Act (CEPA):
All components of this product are either on the Domestic Substances List (DSL) or exempt.

EMERGENCY TELEPHONE NUMBER

Health/Transportation

24 Hour Service (519) 339-2145

MANUFACTURER/SUPPLIER

IMPERIAL OIL
Products Division
111 ST CLAIR AVENUE W.
Toronto, Ontario
M5W 1K3
(416) 968-4111

2. REGULATED COMPONENTS

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

NAME	%	CAS	
Toluene	100	108-88-3	LD50: > 2 g/kg skn rbt LC50: 8,000 ppm rat

3. TYPICAL PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Spec. Gravity: 0.87 at 15.5 deg C
Vap. Pres.: 7 kPa at 38 deg C
Solubility in Water: < 0.1% at 20 deg C
Boiling Point: 110 to 111 deg C
Freezing/Melting Point.: -95 deg C
Viscosity: 0.65 cST at 25 deg C
Vapour Density (air=1): 3.17
Evaporation Rate: 2.1
% Volatile: 100
Molecular Wt: 92
Odour: Aromatic odour.
Appearance: Clear, colourless liquid.

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

High vapour/aerosol concentrations (greater than approximately 1000 ppm) are irritating to the eyes and the respiratory tract, and may cause headaches, dizziness, anesthesia, drowsiness, unconciousness, and other central nervous system effects, including death.
Negligible hazard at normal temperatures (up to 38 deg C).

EYE CONTACT:

Irritating, but will not injure eye tissue.

SKIN CONTACT:

Frequent or prolonged contact may irritate the skin and cause a skin rash (dermatitis).
Brief contact with the liquid will not result in significant irritation unless evaporation is prevented.

INGESTION:

Small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting may cause mild to severe pulmonary injury and possibly death.
Low toxicity.

OCCUPATIONAL EXPOSURE LIMIT

ACGIH RECOMMENDS:

For Toluene, 50 ppm (188 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 before reuse.

INGESTION:

If swallowed, DO NOT induce vomiting. 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 eye contact is unlikely, but may occur as a result of short and/or periodic exposures, wear 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 container closed. Handle and open containers with care.
Store in a cool, well ventilated place away from incompatible materials.
DO NOT handle or store near an open flame, heat, or other sources of ignition. Protect material from direct sunlight.
Material will accumulate static charges which may cause an electrical spark (ignition source). Use proper grounding procedures.
DO NOT pressurize, cut, heat, or weld containers.
Empty product containers may contain product residue. DO NOT reuse empty containers without commercial cleaning or reconditioning.

SPILL CONTROL AND DISPOSAL:

Consult an expert on the 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.

Please turn over

MATERIAL SAFETY DATA SHEET

Esso

Date Prepared April 07, 1994
Supersedes July 18, 1991
MSDS Number 000117

Cette fiche signalétique est aussi disponible en français

1. PRODUCT INFORMATION

Product Identifier INTERMEDIATE RESIDUAL FUEL
ESSO FUEL OIL 46 LS
ESSO MARINE INTERMEDIATE FUEL
FUEL OIL 46
FUEL OIL 46 LS
IMPERIAL ROYAL FUEL OIL
INTERMEDIATE FUEL OIL
MARINE INTERMEDIATE FUEL

Application and Use
Intermediate residual fuel requiring some preheating for use in liquid fuel burning equipment for heating and/or as a fuel in medium to slow speed internal combustion engines

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 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 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 #
Light Atmospheric Gas Oil	0-40 v/v	64741-44-2
Heavy Atmospheric Gas Oil	0-40 v/v	68915-96-8
Light Cat. Cracked Distillate	0-80 v/v	64741-59-9
Cat Cracked Clarified Oil	0-10 v/v	64741-62-4
Oxidized Pitch (petroleum)	0-70 v/v	68187-58-6

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: 0.930 to 0.995 at 15.5 deg C
Viscosity: 12.00 cSt at 50 deg C
to 460.00 cSt at 50 deg C
Vapour Density: > 1
Boiling Point: not available
Evaporation rate: < 1 (1 = n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: not available
Odour Threshold: not available
Vapour Pressure: 0.1 kPa at 15 deg C
Appearance/odour: Black liquid

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Low toxicity.
Elevated temperatures or mechanical action may form vapours, mists or fumes which may affect various internal body systems.
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).
Certain components present in this material may be absorbed through the skin in toxic quantities.

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:

Contains polycyclic aromatic compounds (PAC's). Prolonged and/or repeated skin contact with certain PAC's has been shown to cause skin cancer. Prolonged and/or repeated exposures by inhalation of certain PAC's may also cause cancer of the lung and of other parts of the body. This material or one of its components has shown evidence of causing mutations in laboratory animals.
Prolonged and/or repeated exposures may cause liver disorder and/or damage

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:
For total oil mist and particulate, 0.2 mg/m3 benzene soluble fraction recommended.

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.

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.

Please turn over

MATERIAL SAFETY DATA SHEET

Date Prepared May 17, 1995
Supersedes May 3, 1994
MSDS Number 000113

Cette fiche signalétique est aussi disponible en français

1. PRODUCT INFORMATION

Product Identifier KEROSENE (DYED OR CLEAR)
ESSO KEROSENE
ESSO KEROSENE (DYED)
KEROSENE
KEROSENE (DYED)
KEROSENE FOR UFA

Application and Use:
Light, low sulphur, clean burning distillate fuel for vented heaters and wick lamps

Product Description:

A mixture of petroleum 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: Kerosene
Class: Flammable liquid 3.3 Packing Group: III
PIN Number: UN1223 Guide Number: 122

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	100 v/v	8008-20-6 LD50: > 5g/kg, oral, rat

3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: not available
Viscosity: 1.00 cSt at 40 deg C to 1.90 cSt at 40 deg C
Vapour Density: 4.5
Boiling Point: 130 to 288 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: < 1 kPa at 38 deg C
Density: 0.80 g/cc at 15 deg C
Appearance/odour: Clear, colourless 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.

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.

Please turn over

MATERIAL SAFETY DATA SHEET

Date Prepared May 18 1995
Supersedes April 13 1994
MSDS Number 000111

Cette fiche signalétique est aussi disponible en français

1. PRODUCT INFORMATION

Product Identifier KEROSENE TYPE AVIATION TURBINE FUEL
ESSO JET A
ESSO JET A1
ESSO TURBO FUEL A
ESSO TURBO FUEL A1
JET A
JET A1
TURBO FUEL A
TURBO FUEL A1
TURBO FUEL A1 F34
TURBO FUEL A1-JP8

Application and Use
Kerosene-type aviation fuel for turbine-powered aircraft

Product Description

A mixture of aliphatic and aromatic hydrocarbons and additives.

REGULATORY CLASSIFICATION

WHMIS:

Class B, Division 3 Combustible 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 3.3 Packing Group: III
PIN Number: UN1863 Guide Number: 121.

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 Hydrocracked Distillate	0-100 v/v	64741-77-1	
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

Physical State Liquid
Specific gravity not available
Viscosity 8.00 cSt at -20 deg C
Vapour Density: 4
Boiling Point: 140 to 300 deg C
Evaporation rate: < 1 (1 = n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point -40 deg C MAX
Odour Threshold not available
Vapour Pressure 4 kPa at 38 deg C
Density 0.81 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.
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 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.

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

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.

Please turn over

Esso Imperial Oil

MATERIAL SAFETY DATA SHEET

Date Prepared February 24, 1994
Supersedes May 5, 1993
MSDS Number 020140

1. PRODUCT INFORMATION

Product Identifier PORTABLE HEATER FUEL

Application and Use
Solvent diluent chemical feedstock, or fuel.

Product Description
Aliphatic hydrocarbon

CAS number 8052-41-3

REGULATORY CLASSIFICATION

WHMIS Information
Class B, Division 3 Combustible Liquids

TDG Information (Rail/Road)
PIN Number UN 1256
Shipping Name Naphtha, solvent
Packing Group III
Primary TDG Class 3

Canadian Environmental Protection Act (CEPA):
All components of this product are either on the Domestic Substances List (DSL) or exempt

EMERGENCY TELEPHONE NUMBER

Health/Transportation

24 Hour Service (519) 339-2145

MANUFACTURER/SUPPLIER

IMPERIAL OIL
Products Division
111 ST CLAIR AVENUE W.
Toronto, Ontario
M5W 1K3
(416) 968-4111

2. REGULATED COMPONENTS

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

NAME	% (v/v)	CAS	
Stoddard solvent	100	8052-41-3	LD50: > 5 g/kg orl rat LC50: > 5 g/m3 rat

3. TYPICAL PHYSICAL AND CHEMICAL PROPERTIES

Physical State Liquid
Spec. Gravity 0.79 at 15.5 deg C
Vap. Pres < 0.1 kPa at 20 deg C
Solubility in Water < 0.01% at 25 deg C
Boiling Point 156 to 197 deg C
Freezing/Melting Point -58 deg C
Viscosity 1.14 cST at 25 deg C
Vapour Density (air=1): 4.8
Evaporation Rate 0.1 Approximately
% Volatile 100
Odour Mild petroleum odor.
Appearance Clear, colorless liquid.

4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

High vapour/aerosol concentrations (greater than approximately 1000 ppm) are irritating to the eyes and the respiratory tract, and may cause headaches, dizziness, anesthesia, drowsiness, unconciousness, and other central nervous system effects, including death.

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)
Skin contact may aggravate an existing dermatitis condition

INGESTION:

Minimal toxicity
Small amounts of liquid aspirated into the respiratory system during ingestion or from vomiting may cause mild to severe pulmonary injury and possibly death

SPECIAL HEALTH PRECAUTIONS:

Health studies have shown that many petroleum hydrocarbons pose potential human health risks which may vary from person to person. As a precaution, exposure to liquids, vapors, mists or fumes should be minimized.

OCCUPATIONAL EXPOSURE LIMIT

ACGIH RECOMMENDS:

For Trimethylbenzene, 25 ppm (123 mg/m3)
For Stoddard Solvent, 100 ppm (525 mg/m3)

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.

INGESTION:

If swallowed, DO NOT induce vomiting. 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 eye contact is unlikely, but may occur as a result of short and/or periodic exposures, wear 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 container closed. Handle and open containers with care.
Store in a cool, well ventilated place away from incompatible materials
DO NOT handle or store near an open flame, heat, or other sources of ignition. Protect material from direct sunlight.
Material will accumulate static charges which may cause an electrical spark (ignition source) Use proper grounding procedures.
DO NOT pressurize, cut, heat, or weld containers.
Empty product containers may contain product residue. DO NOT reuse empty containers without commercial cleaning or reconditioning.

Please turn over

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	LD50:9.2g/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

De Beers **Material Safety Datasheet**

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

Company Details

Name	Site Specific	Emergency Phone Number
Address		Tel
		Fax

1.Product and Company Identification

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

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

2. Composition

Hazardous Components	propane or commercial propane to BS4250 (dimethylmethane)

3. Hazards Identification

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

4. First Aid Measures

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

5. Fire Fighting Measures

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

6. Accidental Release Measures

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

7. Handling And Storage

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

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

8. Exposure Controls/Personal Protection

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

9. Physical & Chemical Properties

Colourless gas.
Boiling Point: -42.1 oC
Lower Explosive Limit = 2.3%
Upper Explosive Limit = 9.5%
Freezing Point: -187.1 oC
Density: 0.5852 @ -44.5 o
Flash Point: -104.4 oC
Auto Ignition Temperature: 450 oC
Vapour Density: 1.56
Soluble in water, alc, ether.
Gas is heavier than air.
Can form explosive mixture with air.
Contact with substance can cause skin burns and severe damage to eyes.
No ignition sources.
Keep container(s) cool if involved in a fire.

10. Stability And Reactivity

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

11. Toxicological Information

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

12. Ecological Information

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

13. Disposal Considerations

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

14. Transport Information

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

15. Regulatory Information

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

National Legislation

16. Other Information

Reason for Alteration: General update.

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

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De Beers

Material Safety Datasheet

CAS No
Date Issued: 19/05/2003
acetylene

Company Details

Name	Site Specific	Emergency Phone Number
Address		Tel
		Fax

1.Product and Company Identification

Trade / Commercial Name	**acetylene**
Chemical Name	acetylene
Formula	
Chemical Family	
Synonyms	

Un No	1001	Hazchem Code	2[S]e
ERG No	116	EAC	17

2. Composition

Hazardous Components	acetylene

3. Hazards Identification

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

4. First Aid Measures

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

5. Fire Fighting Measures

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

6. Accidental Release Measures

Breathing apparatus for fire only
Dilute (substance may be washed to drain with a lot of water)
PRECAUTIONS:
Restrict access to area.
Provide adequate protective equipment and ventilation.
Remove sources of heat and flame.
Notify occupational and environmental authorities.
SPILL OR LEAK:
ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
All equipment used when handling the product must be grounded.
Stop leak if you can do it without risk.
Do not touch or walk through spilled material.
Do not direct water at spill or source of leak.
Use water spray to reduce Vapours or divert vapour cloud drift.
If possible, turn leaking containers so that gas escapes rather than liquid.
Prevent entry into waterways, sewers, basements or confined areas.
Isolate area until gas has dispersed.

7. Handling And Storage

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

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

8. Exposure Controls/Personal Protection

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

9. Physical & Chemical Properties

A colourless gas with a disagreeable odour due to impurities.
Boiling Point: -84 oC (sublime)
Relative Density: Vapour: 0,91 (air:1)
Slightly soluble in water.
Flash Point: -18 oC
Flammable Limite: 2,5 to 80,0%

10. Stability And Reactivity

Conditions to Avoid	Risk of violent reaction.
Incompatible Materials	None.
Other	None.

11. Toxicological Information

Slightly dangerous.
Gas is mildly narcotic in high concentrations and can suffocate by displacing air.
Vapours may cause dizziness or asphyxiation without warning.
Some may be toxic if inhaled at high concentrations.
Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.

12. Ecological Information

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

13. Disposal Considerations

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

14. Transport Information

UN No	1001	Hazchem Code	2[S]e
ERG No	116	EAC	17
IMDG Code	2012		
Marine Pollutant	False		
Class	Class: 2(2.1) Flammable Gas		
Subsidiary Risks	None Forbidden on passenger aircraft		
Tremcard Number	813		

15. Regulatory Information

EEC Hazard Classification	2(2.1)
Risk Phases	Heating may cause an explosion. Explosive with or without contact with air Extremely flammable
Safety Phases	Keep container in a well-ventilated place Keep away from sources of ignition - no smoking Take precautionary measures against static discharges
National Legislation	

16. Other Information

Reason for Alteration: General update.

The information contained herein is based on the present state of our knowledge.
It characterizes the product with regard to the appropriate safety precautions.
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De Beers

Material Safety Datasheet

CAS No
Date Issued: 19/05/2003
oxygen, compressed

Company Details

Name	Site Specific	Emergency Phone Number
Address		Tel
		Fax

1.Product and Company Identification

Trade / Commercial Name	**oxygen, compressed**
Chemical Name	oxygen, compressed
Formula	
Chemical Family	008 Oxygen compounds
Synonyms	

Un No	1072	Hazchem Code	2[S]
ERG No	122	EAC	14

2. Composition

Hazardous Components	oxygen, compressed

3. Hazards Identification

Oxidising agent.
Heating will cause pressure rise with risk of bursting.
Decomposition in a fire: production of toxic fumes.+
May assist fire in burning materials.
The gas is heavier than air and spreads along ground. / The gas is lighter than air.
Spilled liquid has very low temperature and evaporates quickly.
Contact with liquid causes severe damage: to skin, to eyes.

4. First Aid Measures

First Aid Skin	Clothing frozen to the skin should be thawed with lukewarm water before being removed. Remove & isolate contaminated clothing, including shoes. Have victim lie down and keep warm.
First Aid Eyes	Flush eyes with water for 15 minutes. Hold eyelids open while washing.
First Aid Ingested	Not applicable.
First Aid Inhalation	IMMEDIATELY remove to fresh air. If not breathing give artificial respiration. If breathing of victim is difficult administer oxygen for a maximum

period of one hour.

5. Fire Fighting Measures

Use extinguishing agent suitable for type of surrounding fire.
Small Fires: Dry chemical or CO2.
Large Fires: Water spray, fog or regular foam. Move containers from fire area if you can do it without risk.
Damaged cylinders should be handled only by specialists.
Fire involving Tanks: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
Cool containers with flooding quantities of water until well after fire is out.
Do not direct water at source of leak or safety devices; icing may occur. ALWAYS stay away from the ends of tanks.
Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.
Isolate spill or leak area immediately for at least 25 to 50 metres (80 to 160 feet) in all directions.
Keep unauthorized personnel away. Keep out of low areas. Ventilate closed spaces before entering.
Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
Wear positive pressure self-contained breathing apparatus (SCBA).
Wear chemical protective clothing which is specifically recommended by the manufacturer.
It may provide little or no thermal protection.
Structural firefighters' protective clothing is recommended for fire situations ONLY; it is not effective in spill situations.
Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.
Large spill consider initial downwind evacuation for at least 500 metres (1/3 mile).
If ROAD OR RAIL TANKER is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions;
also, consider initial evacuation for 800 metres (1/2 mile) in all directions.

6. Accidental Release Measures

Breathing apparatus for fire only
Dilute (substance may be washed to drain with a lot of water)
PRECAUTIONS:
Restrict access to area.
Provide adequate protective equipment and ventilation.
Remove sources of heat and flame.
Notify occupational and environmental authorities.
SPILL OR LEAK:
Keep combustibles (wood, paper, oil, etc.) away from spilled material.
Do not touch or walk through spilled material.
Stop leak if you can do it without risk.
If possible, turn leaking containers so that gas escapes rather than liquid.
Do not direct water at spill or source of leak.
Use water spray to reduce Vapours or divert vapour cloud drift.
Prevent entry into waterways, sewers, basements or confined areas.

Allow substance to evapourate.
Isolate area until gas has dispersed.
CAUTION: When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.

7. Handling And Storage

Storage in the same room or space is prohibited with the following classes:
The rooms or spaces should be at least 10M apart.
Explosives Spontaneously Combustibles
Organic Peroxides

8. Exposure Controls/Personal Protection

Occupational Exposure Limits	No Exposure Limits Established
Controls	The control measures appropriate for a particular worksite depend on how this material is used and on the extent of exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. Use a non-sparking, grounded ventilation system separate from other exhaust ventilation systems. Exhaust directly to the outside. Supply sufficient replacement air to make up for air removed. Have a safety shower/eye wash fountain readily available in the immediate work area
Personal Protection	If engineering controls and work practices are not effective in controlling this material, then wear suitable personal protection equipment, including chemical safety goggles & face shield, boots, imperious gloves, coveralls, & respiratory protection. Have appropriate equipment available for use in emergencies.

9. Physical & Chemical Properties

Colourless, tasteless gas or liquid or hexagonal crystals.
Boiling Point: -183 oC
Relative Density: gas: 1,10535 (air:1)
liquid: 1,14 at -183 oC
Odour: Odourless.

10. Stability And Reactivity

Conditions to Avoid	Risk of violent reaction.
Incompatible Materials	Reactivity: Non-flammable but actively supports combustion andincreases the ignition risk of other materials.
Other	None.

11. Toxicological Information

Vapours may cause dizziness or asphyxiation without warning.
Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.

12. Ecological Information

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

13. Disposal Considerations

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

14. Transport Information

UN No	1072	Hazchem Code	2[S]
ERG No	122	EAC	14
IMDG Code	2104		
Marine Pollutant	False		
Class	Class: 2(2.2) Compressed Gas		
Subsidiary Risks	Oxidizing agent		
Tremcard Number	842		

15. Regulatory Information

EEC Hazard Classification	2(2.2)
Risk Phases	Contact with combustible material may cause fire Causes burns
Safety Phases	When using do not smoke
National Legislation	

16. Other Information

Reason for Alteration: General update.

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

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