

# MATERIAL SAFETY DATA SHEET

## SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

### PRODUCT

**Product Name:** KEROSENE TYPE AVIATION TURBINE FUEL  
**Product Description:** Hydrocarbons and Additives  
**MSDS Number:** 8525  
**Intended Use:** Aviation fuel

### COMPANY IDENTIFICATION

**Supplier:** Imperial Oil Products Division  
240 4th Avenue  
Calgary, ALBERTA. T2P 3M9 Canada  
**24 Hour Environmental / Health Emergency Telephone** 519-339-2145  
**Transportation Emergency Phone Number** 519-339-2145  
**Product Technical Information** 1-800-268-3183  
**Supplier General Contact** 1-800-567-3776

## SECTION 2 COMPOSITION / INFORMATION ON INGREDIENTS

### Reportable Hazardous Substance(s) or Complex Substance(s)

Name	CAS#	Concentration*	Acute Toxicity
2-(2-METHOXYETHOXY)-ETHANOL	111-77-3	0 - 0.15%	Dermal Lethality: LD50 > 2.0 g/kg (Rabbit); Oral Lethality: LD50 7.0 g/kg (Rat)
KERSENE	8008-20-6	> 99 %	Dermal Lethality: LD50 > 2000 mg/kg (Rabbit); Inhalation Lethality: LC50 > 5.0 mg/l (Rat); Oral Lethality: LD50 > 5000 mg/kg (Rat)

### Hazardous Constituent(s) Contained in Complex Substance(s)

Name	CAS#	Concentration*	Acute Toxicity
Naphthalene	91-20-3	0.1 - 1%	Dermal Lethality: LD50 < 20 g/kg (Rabbit); Oral Lethality: LD50 0.49 g/kg (Rat)

\* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

## SECTION 3 HAZARDS IDENTIFICATION

This material is considered to be hazardous according to regulatory guidelines (see (M)SDS Section 15).

### PHYSICAL/CHEMICAL EFFECTS

Combustible. Material can release vapours that readily form flammable mixtures. Vapour accumulation could flash and/or explode if ignited. Material can accumulate static charges which may cause an incendiary electrical discharge.

### HEALTH EFFECTS

Irritating to skin. Danger of serious damage to health by prolonged exposure. May cause harm to the unborn child. If swallowed, may be aspirated and cause lung damage. May be irritating to the eyes, nose, throat, and

lungs. Breathing of high vapour concentrations may cause dizziness, light-headedness, headache, nausea and loss of co-ordination. Continued inhalation may result in unconsciousness. High-pressure injection under skin may cause serious damage.

**Target Organs:** Reproductive system | Skin |

<b>NFPA Hazard ID:</b>	Health: 2	Flammability: 2	Reactivity: 0
<b>HMIS Hazard ID:</b>	Health: 2	Flammability: 2	Reactivity: 0

**Note:** This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

## SECTION 4 FIRST AID MEASURES

### INHALATION

Remove from further exposure. For those providing assistance, avoid exposure to yourself or others. Use adequate respiratory protection. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance. If breathing has stopped, assist ventilation with a mechanical device or use mouth-to-mouth resuscitation.

### SKIN CONTACT

Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse. If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a physician as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

### EYE CONTACT

Flush thoroughly with water. If irritation occurs, get medical assistance.

### INGESTION

Seek immediate medical attention. Do not induce vomiting.

### NOTE TO PHYSICIAN

If ingested, material may be aspirated into the lungs and cause chemical pneumonitis. Treat appropriately.

### PRE-EXISTING MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED BY EXPOSURE

Hydrocarbon Solvents/Petroleum Hydrocarbons- Skin contact may aggravate an existing dermatitis.

## SECTION 5 FIRE FIGHTING MEASURES

### EXTINGUISHING MEDIA

**Appropriate Extinguishing Media:** Use water fog, foam, dry chemical or carbon dioxide (CO<sub>2</sub>) to extinguish flames.

**Inappropriate Extinguishing Media:** Straight streams of water

### FIRE FIGHTING

**Fire Fighting Instructions:** Evacuate area. Prevent run-off from fire control or dilution from entering streams, sewers or drinking water supply. Fire-fighters should use standard protective equipment and in enclosed

spaces, self-contained breathing apparatus (SCBA). Use water spray to cool fire exposed surfaces and to protect personnel.

**Unusual Fire Hazards:** Combustible. Vapour is flammable and heavier than air. Vapour may travel across the ground and reach remote ignition sources, causing a flashback fire danger. Hazardous material. Firefighters should consider protective equipment indicated in Section 8.

**Hazardous Combustion Products:** Smoke, Fume, Aldehydes, Sulphur Oxides, Incomplete combustion products, Oxides of carbon

#### FLAMMABILITY PROPERTIES

**Flash Point [Method]:** 38°C (100°F) [ASTM D-93]

**Flammable Limits (Approximate volume % in air):** LEL: 0.7 UEL: 5.0

**Autoignition Temperature:** N/D

### SECTION 6

#### ACCIDENTAL RELEASE MEASURES

#### NOTIFICATION PROCEDURES

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

#### PROTECTIVE MEASURES

Avoid contact with spilled material. Warn or evacuate occupants in surrounding and downwind areas if required, due to toxicity or flammability of the material. See Section 5 for fire fighting information. See Section 3 for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for Personal Protective Equipment.

#### SPILL MANAGEMENT

**Land Spill:** Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Prevent entry into waterways, sewer, basements or confined areas. A vapour-suppressing foam may be used to reduce vapour. Use clean non-sparking tools to collect absorbed material. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Large Spills: Water spray may reduce vapour, but may not prevent ignition in enclosed spaces.

**Water Spill:** Stop leak if you can do so without risk. Eliminate sources of ignition. If the Flash Point exceeds the Ambient Temperature by 10 deg C or more, use containment booms and remove from the surface by skimming or with suitable absorbents when conditions permit. If the Flash Point does not exceed the Ambient Temperature by 10°C, or is less than the Ambient Temperature, use booms as a barrier to protect shorelines and allow the material to evaporate. Seek the advice of a specialist before using dispersants.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

#### ENVIRONMENTAL PRECAUTIONS

Large Spills: Dyke far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

### SECTION 7

#### HANDLING AND STORAGE

#### HANDLING

Avoid contact with skin. Do not siphon by mouth. Use proper bonding and/or earthing procedures. Do not use as a cleaning solvent or other non-motor fuel uses. For use as a motor fuel only. It is dangerous and/or unlawful to put petrol into unapproved containers. Do not fill container while it is in or on a vehicle. Static electricity may ignite vapour and cause fire. Place container on ground when filling and keep nozzle in contact with container. Do not use electronic devices (including but not limited to cellular phones, computers, calculators, pagers or other electronic devices etc) in or around any fuelling operation or storage area unless the devices are certified intrinsically safe by an approved national testing agency and to the safety standards required by national and/or local laws and regulations. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source).

**Static Accumulator:** This material is a static accumulator.

## STORAGE

Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area. Storage containers should be earthed and bonded. Drums must be earthed and bonded and equipped with self-closing valves, pressure vacuum bungs and flame arresters.

## SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Substance Name	Form	Limit/Standard			Note	Source
KEROSENE	Stable Aerosol.	TWA	5 mg/m <sup>3</sup>			Supplier
KEROSENE	Total vapour and aerosol.	TWA	500 mg/m <sup>3</sup>			Supplier
KEROSENE [total hydrocarbon vapour]	Non-Aerosol	TWA	200 mg/m <sup>3</sup>		Skin	ACGIH
Naphthalene		STEL	15 ppm		Skin	ACGIH
Naphthalene		TWA	10 ppm		Skin	ACGIH

NOTE: Limits/standards shown for guidance only. Follow applicable regulations.

## ENGINEERING CONTROLS

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Control measures to consider:

Use explosion-proof ventilation equipment to stay below exposure limits.

## PERSONAL PROTECTION

Personal protective equipment selections vary based on potential exposure conditions such as applications, handling practices, concentration and ventilation. Information on the selection of protective equipment for use with this material, as provided below, is based upon intended, normal usage.

**Respiratory Protection:** If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include:

No special requirements under ordinary conditions of use and with adequate ventilation.

For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate,

gas/vapour warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

**Hand Protection:** Any specific glove information provided is based on published literature and glove manufacturer data. Work conditions can greatly effect glove durability; inspect and replace worn or damaged gloves. The types of gloves to be considered for this material include:

Chemical resistant gloves are recommended.

**Eye Protection:** If contact is likely, safety glasses with side shields are recommended.

**Skin and Body Protection:** Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:

Chemical / oil resistant clothing if contact with material is likely.

**Specific Hygiene Measures:** Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practise good housekeeping.

## ENVIRONMENTAL CONTROLS

See Sections 6, 7, 12, 13.

## SECTION 9

## PHYSICAL AND CHEMICAL PROPERTIES

Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

### GENERAL INFORMATION

**Physical State:** Liquid

**Colour:** pale yellow

**Odour:** petroleum/solvent

**Odour Threshold:** N/D

### IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

**Relative Density (at 15 °C):** 0.81

**Flash Point [Method]:** 38°C (100°F) [ASTM D-93]

**Flammable Limits (Approximate volume % in air):** LEL: 0.7 UEL: 5.0

**Autoignition Temperature:** N/D

**Boiling Point / Range:** < 205°C (401°F)

**Vapour Density (Air = 1):** 4 at 101 kPa

**Vapour Pressure:** [N/D at 20°C] | < 1 kPa (7.5 mm Hg) at 38°C

**Evaporation Rate (N-Butyl Acetate = 1):** N/D

**pH:** N/A

**Log Pow (n-Octanol/Water Partition Coefficient):** > 3.5

**Solubility in Water:** Negligible

**Viscosity:** [N/D at 40°C] | 8.8 cSt (8.8 mm<sup>2</sup>/sec) at -20°C

**Oxidizing properties:** See Sections 3, 15, 16.

### OTHER INFORMATION

**Freezing Point:** N/D

**Melting Point:** N/A

**Pour Point:** -40°C (-40°F)

## SECTION 10

## STABILITY AND REACTIVITY

**STABILITY:** Material is stable under normal conditions.

**CONDITIONS TO AVOID:** Avoid heat, sparks, open flames and other ignition sources.

**MATERIALS TO AVOID:** Halogens, Strong Acids, Alkalies, Strong oxidizers

**HAZARDOUS DECOMPOSITION PRODUCTS:** Material does not decompose at ambient temperatures.

**HAZARDOUS POLYMERIZATION:** Will not occur.

SECTION 11	TOXICOLOGICAL INFORMATION
------------	---------------------------

**Acute Toxicity**

Route of Exposure	Conclusion / Remarks
<b>INHALATION</b>	
Toxicity (Rat): LC50 > 5000 mg/m <sup>3</sup>	Minimally Toxic. Based on test data for structurally similar materials.
Irritation: No end point data.	Elevated temperatures or mechanical action may form vapours, mist, or fumes which may be irritating to the eyes, nose, throat, or lungs. Based on assessment of the components.
<b>INGESTION</b>	
Toxicity (Rat): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
<b>Skin</b>	
Toxicity (Rabbit): LD50 > 2000 mg/kg	Minimally Toxic. Based on test data for structurally similar materials.
Irritation (Rabbit): Data available.	Moderately irritating to skin with prolonged exposure. Based on test data for structurally similar materials.
<b>Eye</b>	
Irritation (Rabbit): Data available.	May cause mild, short-lasting discomfort to eyes. Based on test data for structurally similar materials.

**CHRONIC/OTHER EFFECTS**

**For the product itself:**

Vapour/aerosol concentrations above recommended exposure levels are irritating to the eyes and respiratory tract, may cause headaches, dizziness, anaesthesia, drowsiness, unconsciousness and other central nervous system effects including death. Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.

Jet fuel: Some jet fuels have potential in mice to suppress indicators of immune system functionality. The relevance of these effects to humans is uncertain.

**Contains:**

DIETHYLENE GLYCOL MONOMETHYL ETHER: Oral maternal exposure of animals resulted in teratogenicity. Dermal maternal exposure of animals resulted in slight toxicity to the fetus. Kerosene: Carcinogenic in animal tests. Lifetime skin painting tests produced tumours, but the mechanism is due to repeated cycles of skin damage and restorative hyperplasia. This mechanism is considered unlikely in humans where such prolonged skin irritation would not be tolerated. Did not cause mutations in-vitro. Inhalation of vapours did not result in reproductive or developmental effects in laboratory animals. Inhalation of high concentrations in animals resulted in respiratory tract irritation, lung changes and some reduction in lung function. Non-sensitizing in animal tests. NAPHTHALENE: Exposure to high concentrations of naphthalene may cause destruction of red blood cells, anemia, and cataracts. Naphthalene caused cancer in laboratory

animal studies, but the relevance of these findings to humans is uncertain.

Additional information is available by request.

**CMR Status:**

Chemical Name	CAS Number	List Citations
KERSENE	8008-20-6	4
Naphthalene	91-20-3	3, 4

--REGULATORY LISTS SEARCHED--

1 = IARC 1  
2 = IARC 2A

3 = IARC 2B  
4 = ACGIH ALL

5 = ACGIH A1  
6 = ACGIH A2

**SECTION 12**

**ECOLOGICAL INFORMATION**

The information given is based on data available for the material, the components of the material, and similar materials.

**ECOTOXICITY**

Material -- Expected to be toxic to aquatic organisms.

**MOBILITY**

More volatile component -- Highly volatile, will partition rapidly to air. Not expected to partition to sediment and wastewater solids.

High molecular wt. component -- Low solubility and floats and is expected to migrate from water to the land. Expected to partition to sediment and wastewater solids.

**PERSISTENCE AND DEGRADABILITY**

**Biodegradation:**

Majority of components -- Expected to be inherently biodegradable

**Atmospheric Oxidation:**

More volatile component -- Expected to degrade rapidly in air

**BIOACCUMULATION POTENTIAL**

Majority of components -- Has the potential to bioaccumulate, however metabolism or physical properties may reduce the bioconcentration or limit bioavailability.

**SECTION 13**

**DISPOSAL CONSIDERATIONS**

Disposal recommendations based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal.

**DISPOSAL RECOMMENDATIONS**

Product is suitable for burning in an enclosed controlled burner for fuel value or disposal by supervised incineration at very high temperatures to prevent formation of undesirable combustion products.

**REGULATORY DISPOSAL INFORMATION**

**Empty Container Warning** (where applicable): Empty containers may retain residue and can be dangerous.

DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to refill or clean container since residue is difficult to remove. Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

**SECTION 14****TRANSPORT INFORMATION****LAND (TDG)**

**Proper Shipping Name:** FUEL, AVIATION, TURBINE ENGINE  
**Hazard Class & Division:** 3  
**UN Number:** 1863  
**Packing Group:** III  
**Special Provisions:** 17

Footnote: In containers of 454 litres or less this material is exempt from TDG regulations.

**LAND (DOT)**

**Proper Shipping Name:** FUEL, AVIATION, TURBINE ENGINE  
**Hazard Class & Division:** COMBUSTIBLE LIQUID  
**ID Number:** 1863  
**Packing Group:** III  
**ERG Number:** 128  
**Label(s):** NONE  
**Transport Document Name:** FUEL, AVIATION, TURBINE ENGINE, COMBUSTIBLE LIQUID, UN1863, PG III

Footnote: The flash point of this material is greater than 38°C/100°F. Regulatory classification of this material varies. DOT: Flammable liquid or combustible liquid. OSHA: Combustible liquid. IATA/IMO: Flammable liquid. This material is not regulated under 49 CFR in a container of 450 litre/119 gallon capacity or less when transported solely by land, as long as the material is not a hazardous waste, a marine pollutant, or specifically listed as a hazardous substance.

**SEA (IMDG)**

**Proper Shipping Name:** FUEL, AVIATION, TURBINE ENGINE  
**Hazard Class & Division:** 3  
**EMS Number:** F-E, S-E  
**UN Number:** 1863  
**Packing Group:** III  
**Label(s):** 3  
**Transport Document Name:** FUEL, AVIATION, TURBINE ENGINE, 3, UN1863, PG III

**AIR (IATA)**

**Proper Shipping Name:** FUEL, AVIATION, TURBINE ENGINE  
**Hazard Class & Division:** 3  
**UN Number:** 1863  
**Packing Group:** III  
**Label(s):** 3  
**Transport Document Name:** FUEL, AVIATION, TURBINE ENGINE, 3, UN1863, PG III

**SECTION 15****REGULATORY INFORMATION**



**WHMIS Classification:** Class B, Division 3: Combustible Liquids Class D, Division 2, Subdivision A: Very Toxic Material Class D, Division 2, Subdivision B: Toxic Material

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the (M)SDS contains all the information required by the Controlled Products Regulations.

**CEPA:** All components of this material are either on the Canadian Domestic Substances List (DSL), exempt, or have been notified under CEPA.

**NATIONAL CHEMICAL INVENTORY LISTING:** AICS, IECSC, DSL, EINECS, ENCS, KECI, PICCS, TSCA

**The Following Ingredients are Cited on the Lists Below:**

Chemical Name	CAS Number	List Citations
Naphthalene	91-20-3	1, 5, 6

--REGULATORY LISTS SEARCHED--

1 = TSCA 4

3 = TSCA 5e

5 = TSCA 12b

2 = TSCA 5a2

4 = TSCA 6

6 = NPRI

SECTION 16	OTHER INFORMATION
------------	-------------------

N/D = Not determined, N/A = Not applicable

**THIS SAFETY DATA SHEET CONTAINS THE FOLLOWING REVISIONS:**

No revision information is available.

**THIS MSDS COVERS THE FOLLOWING MATERIALS:** CAN/CGSB-3.23 GRADE F34 | ESSO JET A | ESSO JET A-1 | ESSO TURBO FUEL A | ESSO TURBO FUEL A-1 | JET A | JET A-1 | JET A-1 (FSII) | KEROSENE TYPE AVIATION TURBINE FUEL | TURBO FUEL A | TURBO FUEL A-1 | TURBO FUEL A-1 F34 | TURBO FUEL A-1 JP8

**Precautionary Label Text:**

WHMIS Classification: Class B, Division 3: Combustible Liquids Class D, Division 2, Subdivision A: Very Toxic Material Class D, Division 2, Subdivision B: Toxic Material

**HEALTH HAZARDS**

Irritating to skin. Danger of serious damage to health by prolonged exposure. May cause harm to the unborn child. If swallowed, may be aspirated and cause lung damage. May cause central nervous system depression.

**Target Organs:** Reproductive system | Skin |

**PHYSICAL HAZARDS**

In use, may form flammable/explosive vapour-air mixture. Combustible. Material can accumulate static charges which may cause an incendiary electrical discharge.

**PRECAUTIONS**

Avoid contact with skin. Do not siphon by mouth. Use proper bonding and/or earthing procedures.

#### **FIRST AID**

**Eye:** Flush thoroughly with water. If irritation occurs, get medical assistance.

**Oral:** Seek immediate medical attention. Do not induce vomiting.

**Skin:** Wash contact areas with soap and water. Remove contaminated clothing. Launder contaminated clothing before reuse.

#### **FIRE FIGHTING MEDIA**

Use water fog, foam, dry chemical or carbon dioxide (CO<sub>2</sub>) to extinguish flames.

#### **SPILL/LEAK**

**Land Spill:** Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop leak if you can do so without risk. Prevent entry into waterways, sewer, basements or confined areas. A vapour-suppressing foam may be used to reduce vapour. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.

**Water Spill:** Stop leak if you can do so without risk. Eliminate sources of ignition. Report spills as required to appropriate authorities. If the Flash Point exceeds the Ambient Temperature by 10 deg C or more, use containment booms and remove from the surface by skimming or with suitable absorbents when conditions permit. If the Flash Point does not exceed the Ambient Temperature by 10°C, or is less than the Ambient Temperature, use booms as a barrier to protect shorelines and allow the material to evaporate. Seek the advice of a specialist before using dispersants.

#### **Use**

Not intended or suitable for use in or around a household or dwelling.

-----  
The information and recommendations contained herein are, to the best of Imperial Oil's knowledge and belief, accurate and reliable as of the date issued. Imperial Oil assumes no responsibility for accuracy of information unless the document is the most current available from an official Imperial Oil distribution system. The information and recommendations are offered for the user's consideration and examination, and it is the user's responsibility to satisfy itself that they are suitable and complete for its particular use. If buyer repackages this product, legal counsel should be consulted to insure proper health, safety and other necessary information is included on the container. Appropriate warnings and safe-handling procedures should be provided to handlers and users. Alteration of this document is strictly prohibited. Except to the extent required by law, republication or retransmission of this document, in whole or in part, is not permitted.

-----  
DGN: 5007485 (1012675)

-----  
Copyright 2002 Imperial Oil Limited, All rights reserved

Prepared By: Imperial Oil Limited, IH and Product Safety