

### 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Jet A with PFA 56 MB

**MSDS Code:** 636070

**Synonyms:** Jet A-56MB  
Jet Fuel  
Jet Fuel A  
Jet A with DiEGME  
Jet A with FSII  
Kerosine  
Turbine Fuel with PFA 56MB

**Intended Use:** Aviation Turbine Fuel

**Responsible Party:** 66 Aviation Products  
A Division of ConocoPhillips  
600 N. Dairy Ashford  
Houston, Texas 77079-1175

**Customer Service:** 800-234-6603

**Technical Information:** 918-661-6991

**MSDS Information:** Internet: <http://w3.conocophillips.com/NetMSDS/>

**Emergency Telephone Numbers:** Chemtrec: 800-424-9300 (24 Hours)  
California Poison Control System: 800-356-3219

### 2. HAZARDS IDENTIFICATION

#### Emergency Overview

#### **WARNING!**

Flammable Liquid and Vapor  
Skin Irritant  
Aspiration Hazard  
Cancer Hazard (Component)

#### NFPA



**Appearance:** Colorless  
**Physical Form:** Liquid  
**Odor:** Kerosene

#### **Potential Health Effects**

**Eye:** Contact may cause mild eye irritation including stinging, watering, and redness.

**Skin:** Mild to moderate skin irritant. Contact may cause redness, itching, a burning sensation, and skin damage. Prolonged or repeated contact may cause drying and cracking of the skin, dermatitis (inflammation), burns, and severe skin damage. No harmful effects from skin absorption are expected.

**Inhalation (Breathing):** Expected to have a low degree of toxicity by inhalation.

**Ingestion (Swallowing):** No harmful effects expected from ingestion. ASPIRATION HAZARD - This material can enter lungs during swallowing or vomiting and cause lung inflammation and damage.

**Signs and Symptoms:** Effects of overexposure may include irritation of the respiratory tract, irritation of the digestive tract, nausea, vomiting and signs of nervous system depression (e.g., headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue).

**Pre-Existing Medical Conditions:** Conditions aggravated by exposure may include skin disorders, respiratory (asthma-like) disorders and male reproductive disorders.

See Section 11 for additional Toxicity Information.

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	CAS	Concentration (wt %)
Kerosene ..C9-16	8008-20-6	100
Naphthalene	91-20-3	<1
Diethylene Glycol Methyl Ether	111-77-3	<0.2

### 4. FIRST AID MEASURES

**Eye:** If irritation or redness develops from exposure, flush eyes with clean water. If symptoms persist, seek medical attention.

**Skin:** Remove contaminated shoes and clothing, and flush affected area(s) with large amounts of water. If skin surface is damaged, apply a clean dressing and seek medical attention. If skin surface is not damaged, cleanse affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation or redness develops, seek medical attention.

**Inhalation (Breathing):** First aid is not normally required. If breathing difficulties develop, move victim away from source of exposure and into fresh air. Seek immediate medical attention.

**Ingestion (Swallowing):** Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. If victim is drowsy or unconscious and vomiting, place on the left side with the head down. If possible, do not leave victim unattended and observe closely for adequacy of breathing. Seek medical attention.

### 5. FIRE-FIGHTING MEASURES

#### **NFPA 704 Hazard Class**

**Health:** 1    **Flammability:** 2    **Instability:** 0                    (0-Minimal, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

**Unusual Fire & Explosion Hazards:** Flammable. This material can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, mechanical/electrical equipment, and electronic devices such as cell phones, computers, calculators, and pagers which have not been certified as intrinsically safe). Vapors may travel considerable distances to a source of ignition where they can ignite, flash back, or explode. May create vapor/air explosion hazard indoors, in confined spaces, outdoors, or in sewers. Vapors are heavier than air and can accumulate in low areas. If container is not properly cooled, it can rupture in the heat of a fire.

**Extinguishing Media:** Dry chemical, carbon dioxide, or foam is recommended. Water spray is recommended to cool or protect exposed materials or structures. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Water may be ineffective for extinguishment, unless used under favorable conditions by experienced fire fighters.

**Fire Fighting Instructions:** For fires beyond the incipient stage, emergency responders in the immediate hazard area should wear bunker gear. When the potential chemical hazard is unknown, in enclosed or confined spaces, or when explicitly required by DOT, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Move undamaged containers from immediate hazard area if it can be done with minimal risk. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Avoid spreading burning liquid with water used for cooling purposes. Cool equipment exposed to fire with water, if it can be done with minimal risk.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

## 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions:** Flammable. Keep all sources of ignition and hot metal surfaces away from spill/release. The use of explosion-proof electrical equipment is recommended. Stay upwind and away from spill/release. Notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

**Environmental Precautions:** Stop spill/release if it can be done with minimal risk. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Use foam on spills to minimize vapors (see Section 5). Use water sparingly to minimize environmental contamination and reduce disposal requirements.

Spills into or upon navigable waters, the contiguous zone, or adjoining shorelines that cause a sheen or discoloration on the surface of the water, may require notification of the National Response Center (phone number 800-424-8802).

**Methods for Containment and Clean-Up:** Notify fire authorities and appropriate federal, state, and local agencies. Immediate cleanup of any spill is recommended. Dike far ahead of spill for later recovery or disposal. Absorb spill with inert material such as sand or vermiculite, and place in suitable container for disposal.

## 7. HANDLING AND STORAGE

**Precautions for safe handling:** Wear protective gloves. Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment.

Open container slowly to relieve any pressure. Bond and ground all equipment when transferring from one vessel to another. Can accumulate static charge by flow or agitation. Can be ignited by static discharge. The use of explosion-proof electrical equipment is recommended and may be required (see appropriate fire codes). Refer to NFPA-704 and/or API RP 2003 for specific bonding/grounding requirements. Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Do not wear contaminated clothing or shoes. Keep contaminated clothing away from sources of ignition such as sparks or open flames.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

**Conditions for safe storage:** Keep container(s) tightly closed. Use and store this material in cool, dry, well-ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Post area "No Smoking or Open Flame." Store only in approved containers. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage. Outdoor or detached storage is preferred. Indoor storage should meet OSHA standards and appropriate fire codes.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Component	ACGIH	OSHA	Other:
Kerosene ..C9-16	TWA: 200 mg/m <sup>3</sup> Skin	---	---
Naphthalene	TWA: 10 ppm STEL: 15 ppm Skin	TWA: 10 ppm TWA: 50 mg/m <sup>3</sup>	TWA: 0.2 mg/m <sup>3</sup> (as total of 17 PNA's measured by NIOSH Method 5506) (ConocoPhillips Guidelines)

**Note:** State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

**Engineering controls:** If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

### Personal Protective Equipment (PPE):

**Eye/Face:** The use of eye protection that meets or exceeds ANSI Z.87.1 is recommended to protect against potential eye contact, irritation, or injury. Depending on conditions of use, a face shield may be necessary.

**Skin:** The use of gloves impervious to the specific material handled is advised to prevent skin contact. Users should check with manufacturers to confirm the performance of their products. Suggested protective materials: Nitrile

**Respiratory:** Where there is potential for airborne exposure above the exposure limit a NIOSH certified air purifying respirator equipped with organic vapor cartridges/canisters may be used.

A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator's use. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (MUC) as directed by regulation or the manufacturer's instructions, in oxygen deficient (less than 19.5 percent oxygen) situations, or other conditions that are immediately dangerous to life and health (IDLH).

**Other Protective Equipment:** Eye wash and quick-drench shower facilities should be available in the work area. Thoroughly clean shoes and wash contaminated clothing before reuse.

**Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.**

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Note:** Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

<b>Appearance:</b>	Colorless
<b>Physical Form:</b>	Liquid
<b>Odor:</b>	Kerosene
<b>Odor Threshold:</b>	No data
<b>pH:</b>	Not applicable
<b>Vapor Pressure:</b>	0.40 mm Hg
<b>Vapor Density (air=1):</b>	> 4.5
<b>Boiling Point/Range:</b>	300-572°F / 149-300°C
<b>Melting/Freezing Point:</b>	<-40°F / <-40°C
<b>Solubility in Water:</b>	<0.1%
<b>Partition Coefficient (n-octanol/water) (Kow):</b>	No data
<b>Specific Gravity:</b>	0.775-0.840 @ 68°F (20°C)
<b>Bulk Density:</b>	6.73 lbs/gal
<b>Viscosity:</b>	1.5-2.5 cSt typical @ 68°F (20°C) / 8 max cSt @ -4°F (-20°C)
<b>Percent Volatile:</b>	98-100% @ 510°F (266°C)
<b>Evaporation Rate (nBuAc=1):</b>	<1
<b>Flash Point:</b>	100-150°F / 38-66°C
<b>Test Method:</b>	Tag Closed Cup (TCC), ASTM D56
<b>LEL (vol % in air):</b>	0.6
<b>UEL (vol % in air):</b>	4.7
<b>Autoignition Temperature:</b>	410°F / 210°C

## 10. STABILITY AND REACTIVITY

**Stability:** Stable under normal ambient and anticipated conditions of storage and handling. Flammable liquid and vapor. Vapor can cause flash fire.

**Conditions to Avoid:** Avoid high temperatures and all sources of ignition. Prevent vapor accumulation.

**Materials to Avoid (Incompatible Materials):** Avoid contact with strong oxidants such as liquid chlorine, concentrated oxygen, sodium hypochlorite, calcium hypochlorite, etc..

**Hazardous Decomposition Products:** The use of hydrocarbon fuel in an area without adequate ventilation may result in hazardous levels of combustion products (e.g., oxides of carbon, sulfur and nitrogen, benzene and other hydrocarbons) and/or dangerously low oxygen levels.

**Hazardous Polymerization:** Not known to occur.

## 11. TOXICOLOGICAL INFORMATION

### Chronic Data:

Cancer mortality and morbidity were followed in a cohort of 2182 men exposed to jet fuel in the Swedish Armed Forces. No increase in the frequency of total neoplasms or cancers at specific sites was seen, even when the duration of employment, latency, occupation, or type of exposure were considered. IARC has concluded that there is inadequate evidence for the carcinogenicity of jet fuel in both animals and humans.

Jet-A and kerosene were negative in skin sensitization studies in animals. JP-8, a similar material, has been shown to be a weak skin sensitizer, and to suppress cellular immunity in laboratory animal studies.

In an epidemiology study comparing 30 exposed and 60 unexposed workers, those exposed to jet fuel (average 300 mg/m<sup>3</sup>, average employment 17 years) did not perform as well in some psychological and motor skills tests.

### **Kerosene ..C9-16**

**Carcinogenicity:** Petroleum middle distillates have been shown to cause skin tumors in mice following repeated and prolonged skin contact. Follow-up studies have shown that these tumors are produced through a non-genotoxic mechanism associated with frequent cell damage and repair, and that they are not likely to cause tumors in the absence of prolonged skin irritation. Animal studies have also shown that washing the skin with soap and water can reduce the tumor response. Middle distillates with low polynuclear aromatic hydrocarbon content have not been identified as a carcinogen by NTP, IARC or OSHA. Diesel exhaust has been identified as a probable cancer hazard by IARC

### **Naphthalene**

**Carcinogenicity:** Naphthalene has been evaluated in two year inhalation studies in both rats and mice. The National Toxicology Program (NTP) concluded that there is clear evidence of carcinogenicity in male and female rats based on increased incidences of respiratory epithelial adenomas and olfactory epithelial neuroblastomas of the nose. NTP found some evidence of carcinogenicity in female mice (alveolar adenomas) and no evidence of carcinogenicity in male mice. Naphthalene has been identified as a carcinogen by IARC and NTP.

### **Diethylene Glycol Methyl Ether**

**Reproductive:** Repeated oral administration of diethylene glycol methyl ether at dosage of 1,800 and 3,600 mg/kg/day to rats resulted in decreased testicular weight, atrophy of the seminiferous tubules, and alterations in sperm morphology and motility.

Diethylene glycol methyl ether has been shown to cause developmental toxicity in several laboratory species via different routes of administration.

### Acute Data:

Component	Oral LD50	Dermal LD50	Inhalation LC50
Kerosene ..C9-16	>5 g/kg (Rat)	>2,000 mg/kg (Rabbit)	>5000 ppm (rat)
Diethylene Glycol Methyl Ether	9.2 g/kg (Rat); 4 ml/kg (Rat); 8222 mg/kg (Mouse); 7190 mg/kg (Rabbit); 4160 mg/kg (G.pig)	2500 ul/kg (Rabbit)	No Data

## 12. ECOLOGICAL INFORMATION

When No 1 distillates (kerosene, jet fuels, heating oils) escape into the environment due to leaks or spills, most of their constituent hydrocarbons will evaporate and be photodegraded by reaction with hydroxyl radicals in the atmosphere. The half-lives in air for many of the individual hydrocarbons is less than one day. Less volatile hydrocarbons can persist in the aqueous environment for longer periods. They remain floating on the surface of the water; those that reach soil or sediment biodegrade relatively slowly. Soil contaminated with jet fuel can develop adapted microbial species able to use the fuel as a carbon source; soil aeration and nutrient supplementation can enhance this biodegradation.

Reported LC50/EC50 values for water-soluble fractions of kerosenes and jet fuels are usually in the range of 10 to 100 mg/liter. Adverse effects on the gills, pseudobranch, kidney and nasal mucosa have been reported in fish involved in spills of jet fuel. Juvenile clams may be particularly sensitive to marine sediments contaminated as a result of spilled jet fuel. Direct toxicity and fouling of sea birds from jet fuel can occur if birds dive through floating layers of spilled fuel.

Phytotoxic effects of jet fuel have been reported following exposure of plants to sprays or vapors. Lack of seed germination and inhibition of seedling growth may also occur. There is evidence for moderate bioaccumulation of the water-soluble hydrocarbons present in jet fuels.

**13. DISPOSAL CONSIDERATIONS**

The generator of a waste is always responsible for making proper hazardous waste determinations and needs to consider state and local requirements in addition to federal regulations.

This material, if discarded as produced, would not be a federally regulated RCRA "listed" hazardous waste. However, it would likely be identified as a federally regulated RCRA hazardous waste for the following characteristic(s) shown below. See Sections 7 and 8 for information on handling, storage and personal protection and Section 9 for physical/chemical properties. It is possible that the material as produced contains constituents which are not required to be listed in the MSDS but could affect the hazardous waste determination. Additionally, use which results in chemical or physical change of this material could subject it to regulation as a hazardous waste.

Container contents should be completely used and containers should be emptied prior to discard. Container residues and rinseates could be considered to be hazardous wastes.

**EPA Waste Number(s)**

- D001 - Ignitability characteristic

**14. TRANSPORTATION INFORMATION**

**U.S. Department of Transportation (DOT)**

**Shipping Description:** Fuel, aviation, turbine engine, Combustible liquid **or** 3, UN1863, III  
**Non-Bulk Package Marking:** None **or** Fuel, aviation, turbine engine, UN1863  
**Non-Bulk Package Labeling:** None **or** Flammable liquid  
**Bulk Package/Placard Marking:** Combustible **or** Flammable/1863  
**Packaging - References:** None; None; 49 CFR 173.241 **or** 49 CFR 173.150, 173.203, 173.241  
*(Exceptions; Non-bulk; Bulk)*  
**Hazardous Substance:** See Section 15 for RQ`s  
**Emergency Response Guide:** 128  
**Note:** This product may be classified as a Combustible Liquid for domestic land transportation under 49 CFR 173.150(f). Combustible liquids are not regulated by DOT in non-bulk quantities shipped by land.

**International Maritime Dangerous Goods (IMDG)**

**Shipping Description:** *Not regulated if flashpoint is >60° C closed-cup*  
 UN1863, Fuel, aviation, turbine engine, 3, III, (  
**Non-Bulk Package Marking:** Fuel, aviation, turbine engine, UN1863  
**Labels:** Flammable liquid  
**Placards/Marking (Bulk):** Flammable/1863  
**Packaging - Non-Bulk:** P001  
**EMS:** F-E, S-E  
**Note:** Federal compliance requirements may apply. See 49 CFR 171.12.

**International Civil Aviation Org. / International Air Transport Assoc. (ICAO/IATA)**

**UN/ID #:** *Not regulated if flashpoint is >60° C closed-cup*  
 UN1863  
**Proper Shipping Name:** Fuel, aviation, turbine engine  
**Hazard Class/Division:** 3  
**Subsidiary risk:** None  
**Packing Group:** III  
**Non-Bulk Package Marking:** Fuel, aviation, turbine engine, UN1863  
**Labels:** Flammable liquid  
**ERG Code:** 3L  
**Note:** Additional Federal compliance requirements may apply. See 49 CFR 171.11

	LTD. QTY	Passenger Aircraft	Cargo Aircraft Only
<b>Packaging Instruction #:</b>	Y309	309	310
<b>Max. Net Qty. Per Package:</b>	10 L	60 L	220 L

## 15. REGULATORY INFORMATION

### CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds):

This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372.

### CERCLA/SARA - Section 311/312 (Title III Hazard Categories)

Acute Health:	Yes
Chronic Health:	Yes
Fire Hazard:	Yes
Pressure Hazard:	No
Reactive Hazard:	No

### CERCLA/SARA - Section 313 and 40 CFR 372:

This material contains the following chemicals subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR 372:

Component	Concentration (wt %)	de minimis
Naphthalene	<1	0.1%

### EPA (CERCLA) Reportable Quantity (in pounds):

EPA's Petroleum Exclusion applies to this material - (CERCLA 101(14)).

### California Proposition 65:

Warning: This material may contain detectable quantities of the following chemicals, known to the State of California to cause cancer, birth defects or other reproductive harm, and which may be subject to the requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5):

Component	Type of Toxicity
Toluene	Developmental Toxicant
Benzene	Cancer Developmental Toxicant Male Reproductive Toxicant
Naphthalene	Cancer

### Canadian Regulations:

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

WHMIS Hazard Class  
B3 - Combustible Liquids  
D2A

### National Chemical Inventories:

All components are either listed on the US TSCA Inventory, or are not regulated under TSCA.  
All components are either on the DSL, or are exempt from DSL listing requirements.

**U.S. Export Control Classification Number:** EAR99

## 16. OTHER INFORMATION

Issue Date:	11-Dec-2007
Status:	Final
Previous Issue Date:	22-Oct-2007
Revised Sections or Basis for Revision:	Exposure limits (Section 8)
MSDS Code:	636070

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**MSDS Legend:**

ACGIH = American Conference of Governmental Industrial Hygienists; CAS = Chemical Abstracts Service Registry; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; IARC = International Agency for Research on Cancer; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

**Disclaimer of Expressed and implied Warranties:**

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