



MATERIAL SAFETY DATA SHEET

Jet Fuel

MSDS: 941
REVISION: 07/09/2013

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Jet Fuel

SYNONYMS: Jet Fuel, Kerosene, Jet A, Jet A-1, Jet A (DLA), JAA, JP-8, F-34, Petroleum Distillate Fuel

PRODUCT CODE: F-34 (212132) Jet A-1 (50) (212111) Jet A (DLA) (212113) Jet A w/FSII (212116)
Jet A (212110) Jet A-1 (212112) Jet A w/ SDA (212114) JP-8 (212130)
Kerosene 2-K (212115) JAA (212117)

This Material Safety Data Sheet applies to the listed products and synonym descriptions for Hazard Communication purposes only. Technical specifications vary greatly depending on the product and are not reflected in this document. Consult specification sheets for technical information. This product contains ingredients that are considered to be hazardous as defined by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

IMPORTANT: Read this MSDS before handling or disposing of this product. Pass this information on to employees, customers and product users.

MANUFACTURER: U.S. Oil & Refining Co.
ADDRESS: 3001 Marshall Avenue
Tacoma, WA 98421

EMERGENCY: 253-383-1651
FAX: 253-272-2495
CHEMTREC: 800-424-9300
NATIONAL RESPONSE: 800-424-8802

CHEMICAL FAMILY: Hydrocarbon

PRODUCT USE: Jet Fuel is a complex blend of hydrocarbons derived from various refinery streams. This product is intended for use as a fuel or for use in an engineered process. Use in other applications may result in higher exposures and require additional controls, such as local exhaust ventilation and personal protective equipment.

PREPARED BY: U.S. Oil & Refining Co.

CAS #: 8008-20-6

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

NAME	CAS NUMBER	CONCENTRATION %
Kerosene/Hydrocarbon mixture	8008-20-6	90 - 100%
Cyclohexane	110-82-7	0 - 1%
1,2,4 Trimethylbenzene	95-63-6	0 - 2%
Benzene	71-43-2	0 - 0.2%
Toluene	108-88-3	0 - 0.5%
Xylene	1330-20-7	0 - 2%
Naphthalene	91-20-3	0 - 3%
Ethylbenzene	100-41-4	0 - 0.5%

SECTION 3: HAZARDS IDENTIFICATION

Warning! Combustible! Mist or vapors can cause a flash fire. Liquid, mist or vapors can cause eye, skin and respiratory tract irritation. Ingestion of liquid and aspiration into the lungs can result in chemical pneumonia.

PHYSICAL STATE: Liquid
COLOR: Water white to light amber
ODOR: Faint petroleum odor

ROUTES OF ENTRY: Dermal Contact, Eye Contact, Inhalation, Ingestion

POTENTIAL HEALTH EFFECTS:

EYES: Eye irritation may result from contact with liquid, mists and/or vapors. In severe cases, permanent eye damage may occur.

SKIN: Contact with the skin may cause irritation. Skin irritation leading to dermatitis may occur upon prolonged or repeated contact. Symptoms include redness, itching and dermatitis. Repeated contact may cause harmful effects in other parts of the body.

INGESTION: This material can irritate the mouth, throat, and/or stomach. Aspiration into the lungs may cause chemical pneumonia. Symptoms include burning sensation of the mouth, nausea and vomiting. In severe cases loss of consciousness may occur.

INHALATION: Vapors or mists can irritate the nose, throat and/or lungs and can cause central nervous system depression. Symptoms include headache, nausea, fatigue and dizziness. In severe cases loss of consciousness or death may occur.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: This product contains petroleum distillates similar to those shown to produce skin tumors on laboratory animals. Avoid prolonged or repeated skin contact.

Caution is recommended for personnel with pre-existing central nervous system diseases. Personnel with pre-existing central nervous system disease, skin disorders, or chronic respiratory diseases should avoid exposure to this product.

OVER-EXPOSURE SIGNS/SYMPTOMS: Headache, nausea, vomiting, dizziness, central nervous system- respiratory depression, convulsions, loss of consciousness, coma or death. Eye or skin irritation.

See toxicological information (section 11)

SECTION 4: FIRST AID MEASURES

EYES:	Flush eyes with plenty of water for a minimum of 15 minutes. Seek medical care if irritation persists.
SKIN:	Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if irritation or pain persists. Launder or dry-clean clothing prior to re-use. Discard contaminated leather goods.
INGESTION:	WARNING! DO NOT INDUCE VOMITING. If aspirated into the lungs, may cause chemical pneumonitis. Seek medical attention promptly.
INHALATION:	If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get immediate medical attention if breathing is difficult or stops.
NOTES TO PHYSICIANS OR FIRST AID PROVIDERS:	Ingestion/Inhalation of this product or subsequent vomiting may lead to aspiration, which may cause pneumonitis.

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABILITY OF THE PRODUCT:	Combustible liquid
Flammable limits in air (% by volume)	LOWER: Approx 0.7 UPPER: Approx 5.0
FLASH POINT:	Closed Cup >38°C (100°F)
AUTOIGNITION TEMPERATURE:	Not Determined
PRODUCTS OF COMBUSTION:	Normal combustion forms water vapor and carbon dioxide. Incomplete burning can produce carbon monoxide and particulate matter.
FIRE/EXPLOSION HAZARDS IN THE PRESENCE OF VARIOUS SUBSTANCES:	Combustible liquid. When heated above the flash point, this material will release vapors that can ignite when exposed to open flame, sparks and static discharge. Mists or sprays may be flammable at temperatures below the normal flash point. Keep away from heat and open flame.
FIRE-FIGHTING MEDIA AND INSTRUCTIONS:	<p>Combustible Liquid. Use dry chemical, foam or carbon dioxide to extinguish the fire. Consult foam manufacturer for appropriate media, application rates and water/foam ratio. If a leak or spill has not ignited, ventilate area and use water spray to disperse gas or vapor and to protect personnel attempting to stop a leak. Use water to flush spills away from sources of ignition. Do not flush down public sewers.</p> <p>Collect contaminated fire-fighting water separately. It must not enter the municipal sewage system. Dike area of fire to prevent runoff. Decontaminate emergency personnel and equipment with soap and water.</p> <p>Combustible liquid and vapor. Vapor may cause flash fire. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flashback. Runoff to sewer may create fire or explosion hazard.</p>
SPECIAL FIRE FIGHTING EQUIPMENT:	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Cool tanks, containers and exposed structures with water.
UNUSUAL FIRE & EXPLOSION HAZARDS:	Moderately combustible. When heated above the flash point, this material will release flammable vapors which if exposed to a source of ignition can burn or be explosive in confined spaces. Mists or sprays may be flammable at temperatures below the normal flash point. Keep away from heat and open flame.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS:

Immediately contact emergency personnel. Eliminate all ignition sources. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Do not touch or walk through spilled material. Tanks, vessels or other confined spaces which have contained product should be freed of vapors before entering. The container should be checked to ensure a safe atmosphere before entry. Empty containers may contain toxic, flammable/combustible or explosive residues or vapors. Do not cut, grind, drill, weld or reuse empty containers that contained this product. Do not transfer this product to another container unless the container receiving the product is labeled with proper DOT shipping name, hazard class and other information that describes the product and its hazards.

ENVIRONMENTAL PRECAUTIONS:

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. If facility or operation has an "*oil or hazardous substance contingency plan*", activate its procedures. Stay upwind and away from spill. Wear appropriate protective equipment including respiratory protection as conditions warrant. Do not enter or stay in area unless monitoring indicates that it is safe to do so. Isolate hazard area and restrict entry to emergency crew. Review Fire Fighting Measures section before proceeding with clean up. Keep all sources of ignition (flames, smoking, flares, etc.) away from release. Contain spill in smallest possible area.

Recover as much product as possible (e.g., by vacuuming). Stop leak if it can be done without risk. Use water spray to disperse vapors. Spilled material may be absorbed by an appropriate absorbent, and then handled in accordance with environmental regulations. Prevent spilled material from entering sewers, storm drains, other unauthorized treatment or drainage systems and natural waterways. Contact fire authorities and appropriate federal, state and local agencies. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, contact the National Response Center at 800-424-8802. For highway or railway spills, contact Chemtrec at 800-424-9300.

METHODS FOR CLEANING UP:

If emergency personnel are unavailable, contain spilled material. For small spills, add absorbent (soil may be used in the absence of other suitable materials) and use a nonsparking or explosion-proof means to transfer material to a sealable, appropriate container for disposal. For large spills, dike spilled material or otherwise contain it to ensure runoff does not reach a waterway. Place spilled material in an appropriate container for disposal.

Water spill: Eliminate sources of ignition and warn other ships in the area to stay clear. Notify the proper authorities. Confine with skimming equipment if available or set booms to recover the spill.

SECTION 7: HANDLING & STORAGE

HANDLING: Do not ingest. Do not get in eyes, on skin or on clothing. Keep container closed. Use only with adequate ventilation. Avoid breathing vapor or mist. Keep away from heat, sparks and flame. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Wash thoroughly after handling. In case of fire, use water spray, foam, dry chemical or carbon dioxide as described in the Fire Fighting Measures section of the MSDS. Do not pressurize, cut, weld, braze, solder, drill on or near this container. "Empty" container contains residue (liquid and/or vapor) and may explode in heat of a fire. Use good personal hygiene practices. After handling this product, wash hands before eating, drinking or using toilet facilities. Keep out of reach of children. Failure to use caution may cause serious injury or illness. Do not use as a cleaning solvent or for other non-fuel uses. To prevent ingestion and exposure - Do not siphon by mouth to transfer product between containers.

STORAGE: Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

For information regarding transferring material refer to OSHA Standard 29 CFR 1910.106, "Flammable and Combustible Liquids", National Fire Protection Association (NFPA) 77, "Recommended Practice on Static Electricity", and/or the American Petroleum Institute (API) Recommended Practice 2003, "Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents".

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Special ventilation may be required for handling conditions at elevated temperatures. Ensure that eyewash stations and safety showers are close to the workstation location.

PERSONAL PROTECTION:

SKIN: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Flame retardant clothing is recommended. In case of skin contact, wash with mild soap and water or a waterless hand cleaner. Immediately remove soiled clothing and wash thoroughly before reuse. Discard oil-soaked leather goods.

RESPIRATORY: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION (continued)

- HANDS:** Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
- EYE:** Eye protection (chemical-type goggles and/or face shield) should be worn whenever there is a likelihood of splashing or spraying liquid. Contact lenses should not be worn. Eye wash water should be provided.
- OTHER:** Use good personal hygiene practices.
- PROTECTIVE CLOTHING OR EQUIPMENT:** Gloves, hardhat, face shield, boots, safety glasses, respirator, fire retardant clothing
- PERSONAL PROTECTIVE EQUIPMENT IN CASE OF A LARGE SPILL:** Splash goggles, full suit, vapor respirator, boots, gloves. Suggested protective clothing might not be adequate. Consult a specialist before handling this product.

Established Occupational Exposure Limits

SUBSTANCE	VALUE	TIME/TYPE	SOURCE
Stoddard Solvent	500 ppm	8 Hour PEL	OSHA
Stoddard Solvent	60 ppm	8 Hour PEL	NIOSH
Cyclohexane	300 ppm	8 Hour PEL	OSHA
Benzene	1 ppm	8 Hour PEL	OSHA
Benzene	5 ppm	STEL	OSHA
Toluene	50 ppm	8 Hour TWA	ACGIH
Xylene	100 ppm	8 Hour TWA	OSHA
Xylene	150 ppm	STEL	OSHA
Napthalene	10 ppm	8 Hour TWA	OSHA
Napthalene	15 ppm	STEL	NIOSH

Consult local authorities for acceptable exposure limits.

SECTION 9: PHYSICAL & CHEMICAL PROPERTIES

PHYSICAL STATE:	Liquid
COLOR:	Water white or light amber
ODOR:	Faint Petroleum Odor
BOILING POINT:	160° to 300°C (320° to 572°F)
FREEZING POINT:	-50° to -40°C
SPECIFIC GRAVITY:	0.775 TO 0.840 (Water=1) (@60°F)
VISCOSITY:	1.3 – 2.2 cSt @ 100°F (D-445)
VAPOR PRESSURE:	2.2 kPa @37.8°C (100°F)
VAPOR DENSITY:	>1 (Air=1)
EVAPORATION RATE:	Not Available
MATERIALS TO AVOID:	Reacts with strong oxidizing material and strong acids
HAZARDOUS DECOMPOSITION PRODUCTS:	Burning or excessive heating may produce carbon monoxide and other harmful gases and vapors including oxides and/or other compounds of sulfur and nitrogen.

SECTION 10: STABILITY & REACTIVITY

STABILITY & REACTIVITY:	The product is stable
INCOMPATIBILITY WITH VARIOUS SUBSTANCES:	Reactive with strong oxidizing agents & strong acids
HAZARDOUS DECOMPOSITION PRODUCTS:	None known
HAZARDOUS POLYMERIZATION:	Will not occur
CONDITIONS TO AVOID (STABILITY):	Heat, sparks and/or open flame Strong oxidizers Strong acids

SECTION 11: TOXICOLOGICAL INFORMATION

TOXICITY DATA

Jet Fuel/Straight-run Kerosene CAS 8008-20-6

CARCINOGENICITY: Application of petroleum hydrocarbons of similar composition and boiling range to mouse skin resulted in an increased incidence of skin tumors in some studies. Potential components which are listed by IARC as carcinogens or potential carcinogens are: benzene and ethylbenzene. Risk of cancer depends on duration and level of exposure.

TARGET ORGANS: Potential components which have demonstrated developmental and or target organ issues are: benzene, toluene, xylenes, naphthalene and ethylbenzene.

SECTION 12: ECOLOGICAL INFORMATION

ECOLOGICAL INFORMATION:

This product is potentially toxic to aquatic organisms and should be kept out of sewage and drainage systems and all bodies of water.

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL:

The generation of waste should be avoided or minimized wherever possible. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

This material, if discarded as produced, is not a RCRA "listed" hazardous waste. However, conditions of use which results in chemical, physical changes or contamination, may subject it to regulation as a hazardous waste. Transportation, treatment, storage and disposal of waste material must be conducted in accordance with federal, state and local regulations.

Consult your local or regional authorities.

SECTION 14: TRANSPORT INFORMATION

Jet Fuel:

REGULATORY INFORMATION	UN NUMBER	EMERGENCY RESPONSE GUIDEBOOK	PROPER SHIPPING NAME	CLASS	PACKING GROUP
DOT Classification	UN1863	Guide 128	Fuel, Aviation, Turbine Engine	3	III
IATA	UN1863	Guide 128	Fuel, Aviation, Turbine Engine	3	III

Note: This material may be re-classified as a combustible liquid for domestic land transportation under 49 CFR 173.150 (f)

Kerosene:

REGULATORY INFORMATION	UN NUMBER	EMERGENCY RESPONSE GUIDEBOOK	PROPER SHIPPING NAME	CLASS	PACKING GROUP
DOT Classification	UN1223	Guide 128	Kerosene	3	III
IATA	UN1223	Guide 128	Kerosene	3	III

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

EPA SARA Sections 302, 304, & 313 and CERCLA:

This material contains the following chemicals subject to the reporting requirements of SARA 302, SARA 304, SARA 313, CERCLA and 40 CFR 372:

Chemical Name	CAS Number	Material Concentration	CERCLA/SARA Section 302 TPQ (lbs.)	CERCLA/SARA Section 304 RQ (lbs.)
BENZENE	71-43-2	0 - 0.2%		10
1,2,4 TRIMETHYLBENZENE	95-63-6	0 - 2%		N/A
NAPHTHALENE	91-20-3	1 - 3%		100
XYLENES	1330-20-7	0 - 2%		100

CARCINOGEN IDENTIFICATION:

This mixture may contain chemicals that have been identified as a carcinogen by NTP, IARC, or OSHA.

EXTREMELY HAZARDOUS SUBSTANCES FOR EMERGENCY RESPONSE & PLANNING 40 CFR 355 & 40 CFR 370:

None

EPA SARA 311/312 TITLE III HAZARD CATEGORIES:

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

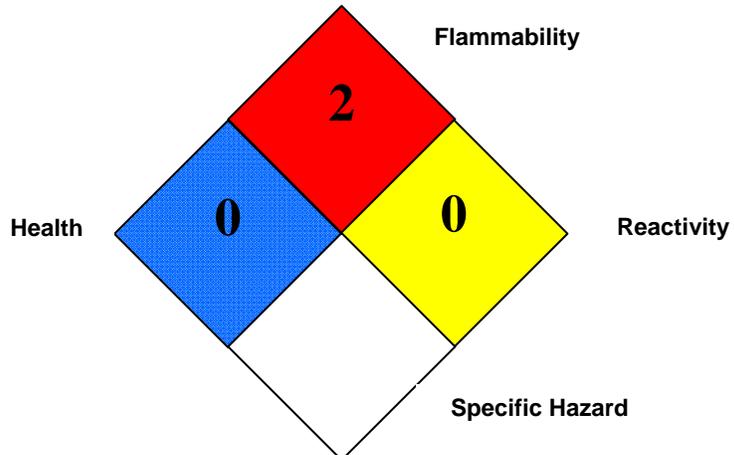
SECTION 16: OTHER INFORMATION

HAZARDOUS MATERIAL
INFORMATION SYSTEM
(USA):

HMIS III		
HEALTH	*	1
FLAMMABILITY		2
PHYSICAL HAZARD		0
PERSONAL PROTECTION		

*Chronic Health Hazard

NATIONAL FIRE
PROTECTION
ASSOCIATION (USA):



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