



# MATERIAL SAFETY DATA SHEET

## 1. Product and Company Identification

<b>Material name</b>	<b>Jet Fuels</b>
<b>Version #</b>	01
<b>Revision date</b>	10-23-2010
<b>CAS #</b>	Mixture
<b>MSDS Number</b>	104
<b>Product use</b>	Refinery feedstock.
<b>Synonym(s)</b>	Jet Fuel, Jet Fuel Stock, Jet A, Aviation Jet Fuel A, JP-5, JP-8, DERD See section 16 for complete information.
<b>Manufacturer information</b>	Valero Marketing & Supply Company and Affiliates P.O. Box 696000 San Antonio, TX 78269-6000 General Assistance 210-345-4593 24 Hour Emergency 866-565-5220 1-800-424-9300 (CHEMTREC USA)

## 2. Hazards Identification

<b>Physical state</b>	Liquid.
<b>Appearance</b>	Liquid (may be dyed red).
<b>Emergency overview</b>	<b>DANGER!</b> Combustible liquid and vapor. Will be easily ignited by heat, spark or flames. Heat may cause the containers to explode.  Harmful if inhaled, absorbed through skin, or swallowed. Aspiration may cause lung damage. Irritating to eyes, respiratory system and skin. In high concentrations, vapors and spray mists are narcotic and may cause headache, fatigue, dizziness and nausea. Exhaust Fumes have been reported to be an occupational hazard due to NIOSH-reported potential carcinogenic properties. Contains benzene. Cancer hazard. Mutagen. May cause heritable genetic damage. May cause adverse reproductive effects - such as birth defects, miscarriages, or infertility. Prolonged exposure may cause chronic effects. Toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.
<b>OSHA regulatory status</b>	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
<b>Potential health effects</b>	
<b>Routes of exposure</b>	Inhalation. Ingestion. Skin contact. Eye contact.
<b>Eyes</b>	Contact may irritate or burn eyes. Eye contact may result in corneal injury.
<b>Skin</b>	Harmful if absorbed through skin. Irritating to skin. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.
<b>Inhalation</b>	Harmful if inhaled. Irritating to respiratory system. In high concentrations, vapors and spray mists are narcotic and may cause headache, fatigue, dizziness and nausea. May cause breathing disorders and lung damage. May cause cancer by inhalation. Prolonged inhalation may be harmful.
<b>Ingestion</b>	Harmful if swallowed. Ingestion may result in vomiting; aspiration (breathing) of vomitus into lungs must be avoided as even small quantities may result in aspiration pneumonitis. Irritating to mouth, throat, and stomach.
<b>Target organs</b>	Blood. Eyes. Liver. Respiratory system. Skin. Kidneys. Central nervous system.
<b>Chronic effects</b>	Cancer hazard. Contains material which may have reproductive toxicity, teratogenic or mutagenic effects. Liver injury may occur. Kidney injury may occur. May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion and blurred vision) and/or damage. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.
<b>Signs and symptoms</b>	Irritation of nose and throat. Irritation of eyes and mucous membranes. Skin irritation. Unconsciousness. Corneal damage. Narcosis. Cyanosis (blue tissue condition, nails, lips, and/or skin). Decrease in motor functions. Behavioral changes. Edema. Liver enlargement. Jaundice. Conjunctivitis. Proteinuria. Defatting of the skin. Rash.
<b>Potential environmental effects</b>	Toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

### 3. Composition / Information on Ingredients

Components	CAS #	Percent
Kerosene	8008-20-6	0 - 100
Naphthalene	91-20-3	0 - 3
Xylene (o,m,p isomers)	1330-20-7	0 - 2
Benzene	71-43-2	0 - 1
Ethylbenzene	100-41-4	0 - 1
Toluene	108-88-3	0 - 1

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

### 4. First Aid Measures

#### First aid procedures

- Eye contact** Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention.
- Skin contact** Remove contaminated clothing and shoes. Wash off immediately with soap and plenty of water. Get medical attention if irritation develops or persists. Wash clothing separately before reuse. Destroy or thoroughly clean contaminated shoes.
- Inhalation** Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention if discomfort develops or persists.
- Ingestion** Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content does not get into the lungs. Get medical attention immediately.

**Notes to physician** In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

**General advice** If exposed or concerned: get medical attention/advice. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before re-use.

### 5. Fire Fighting Measures

**Flammable properties** Combustible by OSHA criteria. Containers may explode when heated.

#### Extinguishing media

- Suitable extinguishing media** Water. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO<sub>2</sub>).
- Unsuitable extinguishing media** Do not use a solid water stream as it may scatter and spread fire.

#### Protection of firefighters

**Specific hazards arising from the chemical** Vapor may cause flash fire. Vapors can flow along surfaces to distant ignition source and flash back. Sensitive to static discharge.

**Protective equipment and precautions for firefighters** Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

#### Fire fighting equipment/instructions

Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do it without risk. In the event of fire, cool tanks with water spray. Cool containers exposed to flames with water until well after the fire is out. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Vapors may form explosive air mixtures even at room temperature. Prevent buildup of vapors or gases to explosive concentrations. Some of these materials, if spilled, may evaporate leaving a flammable residue. Water runoff can cause environmental damage. Use compatible foam to minimize vapor generation as needed.

**Specific methods** In the event of fire and/or explosion do not breathe fumes. Use water spray to cool unopened containers.

**Hazardous combustion products** Carbon monoxide. Carbon Dioxide. Sulfur oxides. Nitrogen oxides (NO<sub>x</sub>). Hydrocarbons.

## 6. Accidental Release Measures

### Personal precautions

Keep unnecessary personnel away. Local authorities should be advised if significant spills cannot be contained. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. See Section 8 of the MSDS for Personal Protective Equipment.

### Environmental precautions

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. Flammable. Review Fire Fighting Measures, Section 5, before proceeding with clean up. Keep all sources of ignition (flames, smoking, flares, etc.) and hot surfaces 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. Use compatible foam to minimize vapor generation as needed. 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 1-800-424-8802. For highway or railways spills, contact Chemtrec at 1-800-424-9300.

### Methods for containment

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak if you can do so without risk. This material is a water pollutant and should be prevented from contaminating soil or from entering sewage and drainage systems and bodies of water. Dike the spilled material, where this is possible. Prevent entry into waterways, sewers, basements or confined areas.

### Methods for cleaning up

Small Spills: Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. This material and its container must be disposed of as hazardous waste.

Large Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent product from entering drains. Do not allow material to contaminate ground water system. Should not be released into the environment.

### Other information

Clean up in accordance with all applicable regulations.

## 7. Handling and Storage

### Handling

Wear personal protective equipment. Do not breathe dust/fume/gas/mist/vapors/spray. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Avoid prolonged exposure. Use only with adequate ventilation. Wash thoroughly after handling. The product is flammable, and heating may generate vapors which may form explosive vapor/air mixtures. DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. When using, do not eat, drink or smoke. Avoid release to the environment.

### Storage

Flammable liquid storage. Do not handle or store near an open flame, heat or other sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. The pressure in sealed containers can increase under the influence of heat. Keep container tightly closed in a cool, well-ventilated place. Keep away from food, drink and animal feedingstuffs. Keep out of the reach of children.

## 8. Exposure Controls / Personal Protection

### Occupational exposure limits

#### US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Benzene (71-43-2)	STEL	2.5 ppm	
	TWA	0.5 ppm	
Ethylbenzene (100-41-4)	STEL	125 ppm	
	TWA	100 ppm	
Kerosene (8008-20-6)	TWA	200 mg/m3	Non-aerosol.
Naphthalene (91-20-3)	STEL	15 ppm	
	TWA	10 ppm	
Toluene (108-88-3)	TWA	20 ppm	
Xylene (o,m,p isomers) (1330-20-7)	STEL	150 ppm	

**US. ACGIH Threshold Limit Values**

Components	Type	Value	Form
	TWA	100 ppm	

**US. OSHA Table Z-2 (29 CFR 1910.1000)**

Components	Type	Value	Form
Benzene (71-43-2)	Ceiling	25 ppm	
	STEL	5 ppm	
	TWA	1 ppm	
Ethylbenzene (100-41-4)	PEL	435 mg/m3	
		100 ppm	
Naphthalene (91-20-3)	PEL	50 mg/m3	
		10 ppm	
Toluene (108-88-3)	Ceiling	300 ppm	
	TWA	200 ppm	
Xylene (o,m,p isomers) (1330-20-7)	PEL	435 mg/m3	
		100 ppm	

**Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)**

Components	Type	Value	Form
Benzene (71-43-2)	STEL	8 mg/m3	
		2.5 ppm	
	TWA	1.6 mg/m3	
Ethylbenzene (100-41-4)	STEL	0.5 ppm	
		125 ppm	
	TWA	543 mg/m3	
Kerosene (8008-20-6)	TWA	434 mg/m3	Vapor.
		100 ppm	
Naphthalene (91-20-3)	TWA	200 mg/m3	
	STEL	15 ppm	
		79 mg/m3	
Toluene (108-88-3)	TWA	10 ppm	
		52 mg/m3	
		50 ppm	
		188 mg/m3	

**Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)**

Components	Type	Value	Form
Benzene (71-43-2)	STEL	2.5 ppm	
		0.5 ppm	
	TWA	0.5 ppm	
Ethylbenzene (100-41-4)	STEL	125 ppm	
	TWA	100 ppm	
Kerosene (8008-20-6)	TWA	200 mg/m3	Non-aerosol.
		100 ppm	
Naphthalene (91-20-3)	STEL	15 ppm	
	TWA	10 ppm	
Toluene (108-88-3)	TWA	20 ppm	
Xylene (o,m,p isomers) (1330-20-7)	STEL	150 ppm	
	TWA	100 ppm	

**Canada. Ontario OELs. (Ministry of Labor - Control of Exposure to Biological or Chemical Agents)**

Components	Type	Value	Form
Benzene (71-43-2)	STEL	2.5 ppm	
	TWA	0.5 ppm	
Ethylbenzene (100-41-4)	STEL	125 ppm	
		540 mg/m3	
	TWA	435 mg/m3	
Kerosene (8008-20-6)		100 ppm	
	TWA	200 mg/m3	

**Canada. Ontario OELs. (Ministry of Labor - Control of Exposure to Biological or Chemical Agents)**

Components	Type	Value
Naphthalene (91-20-3)	STEL	15 ppm 78 mg/m <sup>3</sup>
	TWA	10 ppm 52 mg/m <sup>3</sup>
Toluene (108-88-3)	TWA	20 ppm
	Xylene (o,m,p isomers) (1330-20-7)	STEL
TWA		100 ppm 435 mg/m <sup>3</sup>

**Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)**

Components	Type	Value
Benzene (71-43-2)	STEL	5 ppm 15.5 mg/m <sup>3</sup>
	TWA	1 ppm 3 mg/m <sup>3</sup>
Ethylbenzene (100-41-4)	STEL	543 mg/m <sup>3</sup> 125 ppm
	TWA	100 ppm 434 mg/m <sup>3</sup>
Naphthalene (91-20-3)	STEL	79 mg/m <sup>3</sup> 15 ppm
	TWA	52 mg/m <sup>3</sup> 10 ppm
Toluene (108-88-3)	TWA	50 ppm 188 mg/m <sup>3</sup>
Xylene (o,m,p isomers) (1330-20-7)	STEL	150 ppm 651 mg/m <sup>3</sup>
	TWA	434 mg/m <sup>3</sup> 100 ppm

**Mexico. Occupational Exposure Limit Values**

Components	Type	Value
Benzene (71-43-2)	STEL	5 ppm 16 mg/m <sup>3</sup>
	TWA	1 ppm 3.2 mg/m <sup>3</sup>
Ethylbenzene (100-41-4)	STEL	545 mg/m <sup>3</sup> 125 ppm
	TWA	100 ppm 435 mg/m <sup>3</sup>
Naphthalene (91-20-3)	STEL	75 mg/m <sup>3</sup> 15 ppm
	TWA	50 mg/m <sup>3</sup> 10 ppm
Toluene (108-88-3)	TWA	50 ppm 188 mg/m <sup>3</sup>
Xylene (o,m,p isomers) (1330-20-7)	STEL	150 ppm 655 mg/m <sup>3</sup>
	TWA	435 mg/m <sup>3</sup> 100 ppm

**Engineering controls**

Provide adequate general and local exhaust ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof equipment.

**Personal protective equipment****Eye / face protection**

Wear safety glasses. If splash potential exists, wear full face shield or chemical goggles.

**Skin protection**

Wear chemical-resistant, impervious gloves. Full body suit and boots are recommended when handling large volumes or in emergency situations. Flame retardant protective clothing is recommended.

**Respiratory protection**

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. If workplace exposure limits for product or components are exceeded, NIOSH approved equipment should be worn. Proper respirator selection should be determined by adequately trained personnel, based on the contaminants, the degree of potential exposure and published respiratory protection factors. This equipment should be available for nonroutine and emergency use.

**General hygiene considerations**

Avoid contact with skin. Keep away from food and drink. Provide eyewash station and safety shower. Handle in accordance with good industrial hygiene and safety practice.

**9. Physical & Chemical Properties**

<b>Appearance</b>	Liquid (may be dyed red).
<b>Color</b>	Clear. Straw.
<b>Odor</b>	Kerosene (strong).
<b>Odor threshold</b>	Not available.
<b>Physical state</b>	Liquid.
<b>Form</b>	Liquid.
<b>pH</b>	Not available.
<b>Melting point</b>	Not available.
<b>Freezing point</b>	Not available.
<b>Boiling point</b>	320 - 579.9 °F (160 - 304.4 °C)
<b>Flash point</b>	> 100 °F (> 37.8 °C) Closed Cup
<b>Evaporation rate</b>	< 0.05 (butyl acetate = 1)
<b>Flammability</b>	Flammable liquid and vapor
<b>Flammability limits in air, upper, % by volume</b>	<= 7
<b>Flammability limits in air, lower, % by volume</b>	>= 0.7
<b>Vapor pressure</b>	< 2.7 kPa (<20mmHg) (at 20 °C)
<b>Vapor density</b>	3 (Air=1)
<b>Specific gravity</b>	0.79 - 0.84 (Water=1)
<b>Solubility (water)</b>	Not available.
<b>Partition coefficient (n-octanol/water)</b>	Not available.
<b>Auto-ignition temperature</b>	399.9 °F (204.4 °C)
<b>Decomposition temperature</b>	Not available.
<b>Percent volatile</b>	Negligible.

**10. Chemical Stability & Reactivity Information**

<b>Chemical stability</b>	Stable under normal temperature conditions and recommended use.
<b>Conditions to avoid</b>	Heat, flames and sparks. Ignition sources. Contact with incompatible materials. Do not pressurize, cut, weld, braze, solder, drill, grind or expose empty containers to heat, flame, sparks, static electricity, or other sources of ignition; they may explode and cause injury or death.
<b>Incompatible materials</b>	Strong oxidizing agents.
<b>Hazardous decomposition products</b>	Carbon monoxide. Carbon Dioxide. Sulfur oxides. Hydrocarbons.
<b>Possibility of hazardous reactions</b>	Hazardous polymerization does not occur.

**11. Toxicological Information****Toxicological data**

<b>Product</b>	<b>Test Results</b>
Jet Fuels (Mixture)	Acute Dermal LD50 Rabbit: 2820 ml/kg estimated

Product	Test Results
Jet Fuels (Mixture)	Acute Dermal LD50 Rabbit: 133 g/kg estimated Acute Dermal LD50 Rat: 1333 g/kg estimated Acute Oral LD50 Rat: 116 g/kg estimated Acute Other LD50 Mouse: 230 g/kg estimated Acute Other LD50 Rat: 328 g/kg estimated
Components	Test Results
Ethylbenzene (100-41-4)	Acute Dermal LD50 Rabbit: > 5000 mg/kg Acute Oral LD50 Rat: 3500 mg/kg Acute Oral LD50 Rat: 5.46 g/kg Acute Dermal LD50 Rabbit: 14.1 ml/kg
Toluene (108-88-3)	Acute Inhalation LC50 Rat: 8000 mg/l 4 Hours Acute Oral LD50 Rat: 2.6 g/kg Acute Oral LD50 Mouse: 1590 mg/kg
Xylene (o,m,p isomers) (1330-20-7)	Acute Oral LD50 Rat: 6670 mg/kg Acute Dermal LD50 Rabbit: > 2 g/kg
Naphthalene (91-20-3)	Acute Oral LD50 Rat: 490 mg/kg
<b>Acute effects</b>	Harmful if inhaled, absorbed through skin, or swallowed. Harmful: may cause lung damage if swallowed. Irritating to eyes, respiratory system and skin. In high concentrations, vapors and spray mists are narcotic and may cause headache, fatigue, dizziness and nausea.
<b>Local effects</b>	
<b>US ACGIH Threshold Limit Values: Skin designation</b>	
Benzene (CAS 71-43-2)	Can be absorbed through the skin.
Kerosene (CAS 8008-20-6)	Can be absorbed through the skin.
Naphthalene (CAS 91-20-3)	Can be absorbed through the skin.
<b>Sensitization</b>	This substance may have a potential for sensitization which may provoke an allergic reaction among sensitive individuals.
<b>Chronic effects</b>	Prolonged and repeated exposure to benzene may cause serious injury to blood forming organs and is associated with anemia and to the later development of acute myelogenous leukemia (AML). Toluene has been reported to decrease immunological responses and cause recordable hearing loss in laboratory animals. Repeated exposure to naphthalene may cause cataracts, allergic skin rashes, destruction of red blood cells, and anemia, jaundice, kidney and liver damage. Contains organic solvents which in case of overexposure may depress the central nervous system causing dizziness and intoxication. Danger of serious damage to health by prolonged exposure. Prolonged or repeated overexposure may cause central nervous system, kidney, liver, and lung damage.
<b>Subchronic effects</b>	Subchronic inhalation of benzene by rats produced decreased white blood cell counts, decreased bone marrow cell activity, increased red blood cell activity and cataracts. Blood disorders may occur after prolonged inhalation, prolonged skin contact and/or ingestion. Liver and kidney damage may occur after prolonged and repeated exposure.
<b>Carcinogenicity</b>	
<b>ACGIH Carcinogens</b>	
Benzene (CAS 71-43-2)	A1 Confirmed human carcinogen.
Ethylbenzene (CAS 100-41-4)	A3 Confirmed animal carcinogen with unknown relevance to humans.
Kerosene (CAS 8008-20-6)	A3 Confirmed animal carcinogen with unknown relevance to humans.
Naphthalene (CAS 91-20-3)	A4 Not classifiable as a human carcinogen.
Toluene (CAS 108-88-3)	A4 Not classifiable as a human carcinogen.
Xylene (o,m,p isomers) (CAS 1330-20-7)	A4 Not classifiable as a human carcinogen.
<b>IARC Monographs. Overall Evaluation of Carcinogenicity</b>	
Benzene (CAS 71-43-2)	1 Carcinogenic to humans.
Ethylbenzene (CAS 100-41-4)	2B Possibly carcinogenic to humans.
Naphthalene (CAS 91-20-3)	2B Possibly carcinogenic to humans.
Toluene (CAS 108-88-3)	3 Not classifiable as to carcinogenicity to humans.
Xylene (o,m,p isomers) (CAS 1330-20-7)	3 Not classifiable as to carcinogenicity to humans.

**US NTP Report on Carcinogens: Anticipated carcinogen**

Naphthalene (CAS 91-20-3)

Anticipated carcinogen.

**US NTP Report on Carcinogens: Known carcinogen**

Benzene (CAS 71-43-2)

Known carcinogen.

**US OSHA Specifically Regulated Substances: Cancer hazard**

Benzene (CAS 71-43-2)

Cancer hazard.

**Epidemiology**

Contains benzene. Human epidemiology studies indicate that prolonged and/or repeated overexposure to benzene may cause damage to the blood-producing system and serious blood disorders, including leukemia. Animal tests suggest that prolonged and/or repeated overexposure to benzene may damage the embryo/fetus. The relevance of these animal studies to humans has not been fully established.

**Mutagenicity**

Some middle distillate fuels have caused chromosome damage in the in-vivo rat bone marrow cytogenetics assay and caused mutagenic effects in the L5178Y mouse lymphoma assay. In in-vitro experiments, neither benzene, toluene nor xylene changed the number of sister-chromatid exchanges (SCEs) or the number of chromosomal aberrations in human lymphocytes. However, toluene and xylene caused a significant cell growth inhibition which was not observed with benzene in the same concentrations. In in-vivo experiments, toluene changed the number of sister-chromatid exchanges (SCEs) in human lymphocytes. Toluene may cause heritable genetic damage.

**Neurological effects**

Central and/or peripheral nervous system damage. May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue) and/or damage.

**Reproductive effects**

Benzene, xylene and toluene have demonstrated animal effects of reproductive toxicity. Animal studies of benzene have shown testicular effects, alterations in reproductive cycles, chromosomal aberrations and embryo/fetotoxicity. Naphthalene interferes with embryo development in experimental animals at dose levels that cause maternal toxicity. In humans, excessive exposure to this agent may cause hemolytic anemia in the mother and fetus. May damage fertility or the unborn child. Can cause adverse reproductive effects - such as birth defects, miscarriages, or infertility. Avoid exposure to women during early pregnancy. Avoid contact during pregnancy/while nursing.

**Teratogenicity**

Abusive inhalation of toluene ("glue sniffing") has been reported to be associated with birth defects in the offspring of abusers. Rats exposed to benzene and xylene vapor during pregnancy showed embryo/fetotoxic effects.

**Further information**

Symptoms may be delayed.

**12. Ecological Information****Ecotoxicological data****Components****Test Results**

Ethylbenzene (100-41-4)

LC50 Rainbow trout,donaldson trout (Oncorhynchus mykiss):  
4.2 mg/l 96 hours

Toluene (108-88-3)

LC50 Coho salmon,silver salmon (Oncorhynchus kisutch): 5.5  
mg/l 96 hours

Benzene (71-43-2)

LC50 Rainbow trout,donaldson trout (Oncorhynchus mykiss):  
5.3 mg/l 96 hours

Naphthalene (91-20-3)

LC50 Rainbow trout,donaldson trout (Oncorhynchus mykiss):  
0.91 - 2.82 mg/l 96 hours

**Ecotoxicity**

Contains a substance which causes risk of hazardous effects to the environment.

**Environmental effects**

The product contains a substance which is toxic to aquatic organisms and which may cause long-term adverse effects in the aquatic environment.

**Aquatic toxicity**

Toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

**Persistence and degradability**

Not available.

**Bioaccumulation / Accumulation**

No data available.

**Partition coefficient (n-octanol/water)**

Not available.

**Mobility in environmental media**

No data available.

### 13. Disposal Considerations

<b>Waste codes</b>	D001: Waste Flammable material with a flash point <140 °F D018: Waste Benzene
<b>Disposal instructions</b>	Dispose in accordance with all applicable regulations. Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container.

### 14. Transport Information

#### DOT

**Basic shipping requirements:**

<b>UN number</b>	UN1863
<b>Proper shipping name</b>	Fuel, aviation, turbine engine
<b>Hazard class</b>	Combustible Liquid
<b>Packing group</b>	III
<b>Labels required</b>	3

**Additional information:**

<b>Special provisions</b>	144, B1, IB3, T2, TP1
<b>Packaging exceptions</b>	150
<b>Packaging non bulk</b>	203
<b>Packaging bulk</b>	242
<b>ERG number</b>	128

#### IATA

**Basic shipping requirements:**

<b>UN number</b>	1863
<b>Proper shipping name</b>	Fuel, aviation, turbine engine
<b>Hazard class</b>	3
<b>Packing group</b>	III

**Additional information:**

<b>ERG code</b>	3L
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#### IMDG

**Basic shipping requirements:**

<b>UN number</b>	1863
<b>Proper shipping name</b>	Fuel, aviation, turbine engine, MARINE POLLUTANT
<b>Hazard class</b>	3
<b>Packing group</b>	III
<b>Environmental hazards</b>	

**Marine pollutant** No

**EmS No.** F-E, S-E

#### TDG

**Basic shipping requirements:**

<b>Proper shipping name</b>	FUEL, AVIATION, TURBINE ENGINE
<b>Hazard class</b>	3
<b>UN number</b>	UN1863
<b>Packing group</b>	III

**Additional information:**

<b>Special provisions</b>	17
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DOT



IATA



IMDG



TDG

## 15. Regulatory Information

### US federal regulations

#### US TSCA Section 12(b) Export Notification: Export Notification requirement/De minimis concentration

Naphthalene (CAS 91-20-3) 0.1 % One-Time Export Notification only.

#### US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

Benzene (CAS 71-43-2) 0.1 %  
 Ethylbenzene (CAS 100-41-4) 0.1 %  
 Naphthalene (CAS 91-20-3) 0.1 %  
 Toluene (CAS 108-88-3) 1.0 %  
 Xylene (o,m,p isomers) (CAS 1330-20-7) 1.0 %

#### US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

Benzene (CAS 71-43-2) Listed.  
 Ethylbenzene (CAS 100-41-4) Listed.  
 Naphthalene (CAS 91-20-3) Listed.  
 Toluene (CAS 108-88-3) Listed.  
 Xylene (o,m,p isomers) (CAS 1330-20-7) Listed.

### CERCLA (Superfund) reportable quantity (lbs)

Naphthalene 100  
 Xylene (o,m,p isomers) 1000  
 Benzene 10  
 Ethylbenzene 1000  
 Toluene 100

### Superfund Amendments and Reauthorization Act of 1986 (SARA)

**Hazard categories**  
 Immediate Hazard - Yes  
 Delayed Hazard - Yes  
 Fire Hazard - Yes  
 Pressure Hazard - No  
 Reactivity Hazard - No

**Section 302 extremely hazardous substance** No

**Section 311 hazardous chemical** No

**Drug Enforcement Agency (DEA)** Not controlled

**WHMIS status** Controlled

**WHMIS classification**  
 B3 - Flammable/Combustible  
 D2A - Other Toxic Effects-VERY TOXIC  
 D2B - Other Toxic Effects-TOXIC

### WHMIS labeling



### Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

\*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

#### State regulations

##### US - California Hazardous Substances (Director's): Listed substance

Benzene (CAS 71-43-2)	Listed.
Ethylbenzene (CAS 100-41-4)	Listed.
Naphthalene (CAS 91-20-3)	Listed.
Toluene (CAS 108-88-3)	Listed.
Xylene (o,m,p isomers) (CAS 1330-20-7)	Listed.

##### US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Benzene (CAS 71-43-2)	Listed.
Ethylbenzene (CAS 100-41-4)	Listed.
Naphthalene (CAS 91-20-3)	Listed.
Toluene (CAS 108-88-3)	Listed.

##### US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

Benzene (CAS 71-43-2)	Listed: February 27, 1987 Carcinogenic.
Ethylbenzene (CAS 100-41-4)	Listed: June 11, 2004 Carcinogenic.
Naphthalene (CAS 91-20-3)	Listed: April 19, 2002 Carcinogenic.

##### US - California Proposition 65 - CRT: Listed date/Developmental toxin

Benzene (CAS 71-43-2)	Listed: December 26, 1997 Developmental toxin.
Toluene (CAS 108-88-3)	Listed: January 1, 1991 Developmental toxin.

##### US - California Proposition 65 - CRT: Listed date/Female reproductive toxin

Toluene (CAS 108-88-3)	Listed: August 7, 2009 Female reproductive toxin.
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##### US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

Benzene (CAS 71-43-2)	Listed: December 26, 1997 Male reproductive toxin.
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##### US - Massachusetts RTK - Substance: Listed substance

Benzene (CAS 71-43-2)	Listed.
Ethylbenzene (CAS 100-41-4)	Listed.
Kerosene (CAS 8008-20-6)	Listed.
Naphthalene (CAS 91-20-3)	Listed.
Toluene (CAS 108-88-3)	Listed.

##### US - New Jersey Community RTK (EHS Survey): Reportable threshold

Benzene (CAS 71-43-2)	500 LBS
Ethylbenzene (CAS 100-41-4)	500 LBS
Kerosene (CAS 8008-20-6)	10000 LBS
Naphthalene (CAS 91-20-3)	500 LBS
Toluene (CAS 108-88-3)	500 LBS
Xylene (o,m,p isomers) (CAS 1330-20-7)	500 LBS

##### US - New Jersey RTK - Substances: Listed substance

Benzene (CAS 71-43-2)	Listed.
Ethylbenzene (CAS 100-41-4)	Listed.
Kerosene (CAS 8008-20-6)	Listed.
Naphthalene (CAS 91-20-3)	Listed.
Xylene (o,m,p isomers) (CAS 1330-20-7)	Listed.

##### US - Pennsylvania RTK - Hazardous Substances: Listed substance

Benzene (CAS 71-43-2)	Listed.
Ethylbenzene (CAS 100-41-4)	Listed.

Kerosene (CAS 8008-20-6)	Listed.
Naphthalene (CAS 91-20-3)	Listed.
Toluene (CAS 108-88-3)	Listed.
Xylene (o,m,p isomers) (CAS 1330-20-7)	Listed.

**US - Pennsylvania RTK - Hazardous Substances: Special hazard**

Benzene (CAS 71-43-2)	Special hazard.
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## 16. Other Information

**Further information**

HMIS® is a registered trade and service mark of the NPCA.

**Other information**

Note: 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 products and are not reflected in this document. Consult specification sheets for technical information.

**HMIS® ratings**

Health: 1\*  
Flammability: 2  
Physical hazard: 0

**NFPA ratings**

Health: 1  
Flammability: 2  
Instability: 0

**Disclaimer**

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