



# MATERIAL SAFETY DATA SHEET

## Kerosene

### 1. PRODUCT AND COMPANY IDENTIFICATION

<b>Product Name:</b>	Kerosene
<b>Synonyms:</b>	1K Kerosene Dyed Kerosene K1 Kerosene; K1 Kerosene LS; K1 Super Kerosene LS K2 Kerosene Kerosine Ultra Low Sulfur Kerosene Straight Run Kerosene
<b>Intended Use:</b>	Fuel
<b>Chemical Family:</b>	Petroleum Hydrocarbon
<b>Responsible Party:</b>	ConocoPhillips 600 N. Dairy Ashford Houston, Texas 77079-1175
<b>MSDS Information:</b>	800-762-0942 MSDS@conocophillips.com
<b>Customer Service:</b>	800-762-0942
<b>Technical Information:</b>	800-527-5476

### Emergency Overview

#### 24 Hour Emergency Telephone Numbers:

Spill, Leak, Fire or Accident Call CHEMTREC:

North America: (800) 424-9300

Others: (703) 527-3887 (collect)

California Poison Control System: (800) 356-3219

**Health Hazards/Precautionary Measures:** Causes skin irritation. Aspiration hazard if swallowed. Can enter lungs and cause damage. Use with ventilation adequate to keep exposure below recommended limits, if any. Avoid contact with eyes, skin and clothing. Do not taste or swallow. Wash thoroughly after handling.

**Physical Hazards/Precautionary Measures:** Flammable liquid and vapor. Keep away from heat, sparks, flames, static electricity or other sources of ignition.

<b>Appearance:</b>	Clear, light yellow, or light green , (may be dyed red)
<b>Physical Form:</b>	Liquid
<b>Odor:</b>	Kerosene

#### NFPA 704 Hazard Class:

<b>Health:</b>	2 (Moderate)
<b>Flammability:</b>	2 (Moderate)
<b>Instability:</b>	0 (Least)

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

HAZARDOUS COMPONENTS					
Component / CAS No:	Concentration (wt %)	ACGIH:	OSHA:	NIOSH:	Other:
Hydrodesulfurized Kerosene ..C9-16 64742-81-0	0-100	200 mg/m <sup>3</sup> TWA - SKIN	NE	NE	---
Hydrotreated Distillate, Light ..C9-16 64742-47-8	0-100	200 mg/m <sup>3</sup> TWA - SKIN (as total hydrocarbon vapor)	NE	NE	based on Kerosene 8008-20-6
Kerosene ..C9-16 8008-20-6	0-100	200 mg/m <sup>3</sup> TWA - SKIN (as total hydrocarbon vapor)	NE	NE	---
Naphthalene 91-20-3	0-3	10 ppm TWA 52 mg/m <sup>3</sup> TWA 15 ppm STEL 79 mg/m <sup>3</sup> STEL	10 ppm TWA 50 mg/m <sup>3</sup> TWA	250 ppm IDLH	---

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.

1%=10,000 PPM.  
NE=Not Established

## 3. HAZARDS IDENTIFICATION

### Potential Health Effects

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

**Skin:** Skin irritant. Contact may cause redness, itching, burning, and skin damage. Prolonged or repeated contact can worsen irritation by causing drying and cracking of the skin, leading to dermatitis (inflammation). 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, pneumonitis (inflammation of the lungs), transient excitation followed by signs of nervous system depression (e.g., headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue).

**Cancer:** There is inadequate information to evaluate the cancer hazard of this material. See Section 11 for information on the individual components, if any.

**Target Organs:** Inadequate data available for this material.

**Developmental:** Inadequate evidence available for this material. See Section 11 for developmental toxicity information of individual components, if any.

**Other Comments:** Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage (sometimes referred to as Solvent or Painters' Syndrome). Intentional misuse by deliberately concentrating and inhaling this material may be harmful or fatal.

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

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## 4. FIRST AID MEASURES

**Eye:** If irritation or redness develops, move victim away from exposure and into fresh air. Flush eyes with clean water. If symptoms persist, seek medical attention.

**Skin:** Wipe material from 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 and, if necessary, a waterless skin cleanser. If irritation or redness develops, seek medical attention.

**Inhalation (Breathing):** If respiratory symptoms develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention. If victim is not breathing, clear airway and immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified personnel. 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

### Flammable Properties:

<b>Flash Point:</b>	100-150°F / 38-66°C
<b>Test Method:</b>	Tag Closed Cup (TCC), ASTM D56
<b>OSHA Flammability Class:</b>	Combustible liquid
<b>LEL%:</b>	0.7
<b>UEL%:</b>	7.0
<b>Autoignition Temperature:</b>	410°F/210°C

**Unusual Fire & Explosion Hazards:** This material is flammable and can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, or 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, 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. Cool equipment exposed to fire with water, if it can be done with minimal risk. Avoid spreading burning liquid with water used for cooling purposes.

## 6. ACCIDENTAL RELEASE MEASURES

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. Stop spill/release if it can be done with minimal risk. Wear appropriate protective equipment including respiratory protection as conditions warrant (see Section 8).

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Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Dike far ahead of spill for later recovery or disposal. Use foam on spills to minimize vapors (see Section 5). Spilled material may be absorbed into an appropriate absorbent material.

Notify fire authorities and appropriate federal, state, and local agencies. Immediate cleanup of any spill is recommended. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, notify the National Response Center (phone number 800-424-8802).

## 7. HANDLING AND STORAGE

**Handling:** 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. The use of appropriate respiratory protection is advised when concentrations exceed any established exposure limits (see Sections 2 and 8).

Do not wear contaminated clothing or shoes. Keep contaminated clothing away from sources of ignition such as sparks or open flames. Use good personal hygiene practices.

"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.

**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

**Engineering controls:** If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits (see Section 2), additional engineering controls may be required. Where explosive mixtures may be present, electrical systems safe for such locations must be used (see appropriate electrical codes).

### Personal Protective Equipment (PPE):

**Respiratory:** A NIOSH certified air purifying respirator with an organic vapor cartridge may be used under conditions where airborne concentrations are expected to exceed exposure limits (see Section 2).

Protection provided by air purifying respirators is limited (see manufacturer's respirator selection guide). Use a NIOSH approved self-contained breathing apparatus (SCBA) or equivalent operated in a pressure demand or other positive pressure mode if there is potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.

A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.

**Skin:** The use of gloves impervious to the specific material handled is advised to prevent skin contact, possible irritation, and skin damage. Examples of approved materials are nitrile or Viton® (see glove manufacturer literature for information on permeability). Depending on conditions of use, apron and/or arm covers may be necessary.

**Eye/Face:** Approved eye protection to safeguard against potential eye contact, irritation, or injury is recommended. Depending on conditions of use, a face shield may be necessary.

**Other Protective Equipment:** A source of clean water should be available in the work area for flushing eyes and skin. Impervious clothing should be worn as needed.

Suggestions for the use of specific protective materials are based on readily available published data. Users should check with specific manufacturers to confirm the performance of their products.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Note:** Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm).

<b>Appearance:</b>	Clear, light yellow, or light green (may be dyed red)
<b>Physical Form:</b>	Liquid
<b>Odor:</b>	Kerosene
<b>Odor Threshold:</b>	No data
<b>pH:</b>	Not applicable
<b>Vapor Pressure (mm Hg):</b>	0.40
<b>Vapor Density (air=1):</b>	> 4.5
<b>Boiling Point:</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
<b>Bulk Density:</b>	6.73 lbs/gal
<b>Viscosity cSt @ 40°C:</b>	1.0-2.4
<b>VOC Content(%):</b>	0.16 lb/1000 gal
<b>Percent Volatile:</b>	98-100% @ 545°F (285°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%:</b>	0.7
<b>UEL%:</b>	7.0
<b>Autoignition Temperature:</b>	410°F/210°C

## 10. STABILITY AND REACTIVITY

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

**Conditions to Avoid:** Avoid all possible sources of ignition (see Sections 5 and 7).

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

**Hazardous Decomposition Products:** Combustion can yield carbon, nitrogen and sulfur oxides. 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. See Section 11 for additional information on hazards of engine exhaust.

**Hazardous Polymerization:** Will not occur.

## 11. TOXICOLOGICAL INFORMATION

### Chronic Data:

#### **Hydrodesulfurized Kerosene ..C9-16 (64742-81-0)**

**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.

**Developmental:** Hydrodesulfurized kerosene applied to the skin of female rats at 494, 330, or 165 mg/kg daily for 7 consecutive weeks (prematuring, maturing, and gestation), or for 8 consecutive weeks in males did not result in systemic, reproductive, or developmental toxicity.

### Naphthalene (91-20-3)

**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.

### Acute Data:

#### Hydrodesulfurized Kerosene ..C9-16 (64742-81-0)

*Dermal LD50*= >=2 g/kg (Rabbit)

*LC50*= >5 mg/L (4-hr., Rat)

*Oral LD50*= >5 g/kg (Rat)

based on Kerosene

#### Naphthalene (91-20-3)

*Dermal LD50*= >2.5 g/kg (rat)

*LC50*= >340 mg/m<sup>3</sup>/1H (rat)

*Oral LD50*= 490 mg/kg; 2.6 g/kg (rat)

## 12. ECOLOGICAL INFORMATION

When No 1 distillates 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

This material, if discarded as produced, is not a RCRA "listed" hazardous waste. However, it should be fully characterized for ignitability (D001) and benzene (D018) prior to disposal (40 CFR 261). Use which results in chemical or physical change or contamination may subject it to regulation as a hazardous waste. Along with properly characterizing all waste materials, consult state and local regulations regarding the proper disposal of this material.

Container contents should be completely used and containers should be emptied prior to discard. Container rinsate could be considered a RCRA hazardous waste and must be disposed of with care and in full compliance with federal, state and local regulations. Larger empty containers, such as drums, should be returned to the distributor or to a drum reconditioner. To assure proper disposal of smaller empty containers, consult with state and local regulations and disposal authorities.

## 14. TRANSPORT INFORMATION

### DOT

**Shipping Description:** Kerosene, 3, UN1223, 111

## 14. TRANSPORT INFORMATION

**Non-Bulk Package Marking:** Kerosene, UN1223  
**Non-Bulk Package Labeling:** Flammable  
**Bulk Package/Placard Marking:** Flammable/1223  
**Packaging - References (Exceptions, Non-Bulk, Bulk):** 49 CFR 173.150, 173.203, 173.242  
**Hazardous Substance:** None  
**Emergency Response Guide:** 128  
**Note:** May be reclassified as a Combustible Liquid for domestic land transportation under 49 CFR 173.150(f).

### IMDG

**Shipping Description:** UN1223, Kerosene, 3, III, (38 °C)  
**Non-Bulk Package Marking:** Kerosene, UN1223  
**Labels:** Flammable  
**Placards/Marking (Bulk):** Flammable/1223  
**Packaging - Non-Bulk:** P001, LP01  
**EMS:** F-E, S-E

### ICAO/IATA

**UN/ID #:** UN1223  
**Proper Shipping Name:** Kerosene  
**Hazard Class/Division:** 3  
**Packing Group:** III  
**Subsidiary risk:** None  
**Non-Bulk Package Marking:** Kerosene, UN1223

	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

### U.S. Regulations:

#### EPA SARA 311/312 (Title III Hazard Categories)

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

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

This material contains the following chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372:  
 Naphthalene.....91-20-3.....0-3%

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

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

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

This material contains the following chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372:  
 -- None Known --

#### California Proposition 65:

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

Benzene -- Cancer, Developmental and Reproductive Toxicant  
 Naphthalene -- Cancer  
 Toluene -- Developmental Toxicant

#### Carcinogen Identification:

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This material has not been identified as a carcinogen by NTP, IARC, or OSHA. See Section 11 for carcinogenicity information of individual components, if any.

**TSCA:**

All components are listed on the TSCA inventory.

**International Regulations:****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 CPR.

**Domestic Substances List:** Listed

**WHMIS Hazard Class:**

B2 - Flammable Liquids

D2B - Materials Causing Other Toxic Effects - Toxic Material

## 16. OTHER INFORMATION

<b>Issue Date:</b>	21-Feb-2006
<b>Previous Issue Date:</b>	21-Sep-2005
<b>Product Code:</b>	1049855, 1049856, 1049857, 1049858, 1049859, 1049860
<b>Revised Sections or Basis for Revision:</b>	Product Name / Synonyms (Section 1)
<b>MSDS Code:</b>	682950

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