

MATERIAL SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

National Institute of Standards and Technology
Standard Reference Materials Program
100 Bureau Drive, Stop 2300
Gaithersburg, Maryland 20899-2300

SRM Number: 1617a
MSDS Number: 1617a
SRM Name: Sulfur in Kerosene (High Level)

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Description: A unit of Standard Reference Material (SRM) 1617a consists of 100 mL of a special high sulfur kerosene (No. 1-K) in an amber glass bottle.

Substance: Kerosene

Other Designations: Kerosene (Fuel Oil No. 1, coal oil)

2. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

| Components | CAS Number | EC Number (EINECS) | Nominal Concentration ^(a) (mass fraction) |
|------------|------------|-----------------------|---|
| Kerosene | 8008-20-6 | 232-366-4 | 100 % |

^(a) Hazardous components 1 % or greater; carcinogens 0.1 % or greater are listed in compliance with OSHA 29 CFR 1910.1200.

EC Classification: Xn

EC Risk (R No.): R 65

EC Safety (S No.): S23, S24, S62

EC Risk/Safety Phrases: See Section 15 "Regulatory Information"

3. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0–4): Health = 2 Fire = 2 Reactivity = 0

Major Health Hazards: Eye, skin and respiratory irritation.

Physical Hazards: Flammable liquid and vapor. This material is listed as an OSHA Class II material.

Potential Health Effects

Inhalation: Short term (acute) exposure to concentrations at or below 100 mg/m³ have little or no effect. Higher concentrations may result in irritation. Repeated or prolonged (chronic) inhalation of fumes or mist may result in irritation, tracheitis, bronchitis or pneumonitis.

Skin Contact: Short term (acute) skin contact may result in dry skin, irritation, dermatitis, and edema. Repeated or prolonged (chronic) exposure may result in defatting of the skin and dermatitis.

Eye Contact: Mild to moderate irritation may occur.

Ingestion: Ingestion of this material is unlikely under normal conditions of use. Ingestion of small amounts of may result in gastrointestinal irritation.

Listed as a Carcinogen/Potential Carcinogen:

| | Yes | No |
|--|-------|----------|
| In the National Toxicology Program (NTP) Report on Carcinogens | _____ | <u>X</u> |
| In the International Agency for Research on Cancer (IARC) Monographs | _____ | <u>X</u> |
| By the Occupational Safety and Health Administration (OSHA) | _____ | <u>X</u> |

4. FIRST AID MEASURES

Inhalation: If adverse effects occur, remove to uncontaminated area. Seek medical attention if needed.

Skin Contact: Wash exposed skin with copious amounts of water for at least 15 minutes. Remove any contaminated clothing. Seek medical attention if needed.

Eye Contact: Immediately flush eyes with copious amounts of water for at least 15 minutes. Seek immediate medical attention.

Ingestion: If swallowed do not induce vomiting. Seek immediate medical attention.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Moderate fire hazard. Vapor/air mixtures are explosive above flash point. Vapors are heavier than air and may ignite at a distant ignition source and flash back.

Extinguishing Media: Regular dry chemical, carbon dioxide, water, or regular foam.

Fire Fighting: Wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA).

Flash Point (°C): 55 (131 °F).

Method Used: Closed Cup.

Autoignition Temp. (°C): 210 (410 °F)

Flammability Limits in Air

Upper Explosive Limit (UEL): 5 %

Lower Explosive Limit (LEL): 0.7 %.

6. ACCIDENTAL RELEASE MEASURES

Occupational Release: Avoid heat, flames, sparks or any other source of ignition. Absorb with sand or other non-combustible material. Collect spilled material and place in an appropriate container for disposal

Disposal: Refer to Section 13, "Disposal Considerations".

7. HANDLING AND STORAGE

Storage: Store and handle in accordance with all current regulations and standards. The tightly capped bottle should be stored under normal laboratory conditions away from direct sunlight.

Safe Handling Precautions: See Section 8, "Exposure Controls and Personal Protection".

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits:

ACGIH (TWA): 200 mg/m³ (application restricted to conditions in which there are negligible aerosol exposures as total hydrocarbon vapor)

NIOSH (TWA): 100 mg/m³

Ventilation: Use a local exhaust ventilation system.

Respirator: Respiratory protection that meets OSHA 29 CFR 1910.134 is required if workplace conditions warrant respiratory protection. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

Eye Protection: Wear splash resistant safety goggles. An eye wash station should be readily available near areas of use.

Personal Protection: Wear appropriate protective clothing and chemically resistant gloves to prevent skin exposure.

9. PHYSICAL AND CHEMICAL PROPERTIES

Component: Kerosene

Physical State: Liquid.

Appearance and Odor: Clear to brown with a strong petroleum odor.

Molar Mass: Not applicable.

Specific Gravity (water = 1): 0.8

Kinematic Viscosity (38° C): $1.47 \times 10^{-6} \text{ m}^2/\text{s}$ (1.47 cSt)

Boiling Point (°C): >151 (>304 °F)

Volatility: Not listed.

Vapor Density (air =1): 4.5.

Water Solubility: Insoluble.

Solvent Solubility: Petroleum solvents.

pH: Not applicable.

10. STABILITY AND REACTIVITY

Stability: X Stable Unstable

Conditions to Avoid: Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat or flame.

Incompatible Materials: Oxidizing materials, halogens.

Fire/Explosion Information: See Section 5, "Fire Fighting Measures".

Hazardous Decomposition: Thermal decomposition produces oxides of carbon and sulfur.

Hazardous Polymerization: Will Occur X Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Entry: X Inhalation Skin X Ingestion

Toxicity Data:

Rat, Oral LD₅₀: 5000 mg/kg.

Rat, Inhalation LD₅₀: 5.28 mg/L 4 hours

Rabbit, Skin Irritation: 500 mg, severe (24 hours)

Health Effects (Acute and Chronic): See section 3: "Hazards Identification" for potential health effects.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data: No information listed.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose in accordance with all applicable federal, state, and local regulations.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: Kerosene, UN1223, Hazard Class 3, PG III.

15. REGULATORY INFORMATION

U.S. REGULATIONS:

CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated.
SARA Title III Sections 302 (40 CFR 355.30): Not regulated.
SARA Title III Sections 304 (40 CFR 355.40): Not regulated.
SARA Title III Sections 313 (40 CFR 372.65): Not regulated.
SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE: Yes
CHRONIC: Yes
FIRE: Yes
REACTIVE: No
SUDDEN RELEASE: No

OSHA Process Safety (29 CFR 1910.119): Not regulated.

OSHA List of Toxic and Hazardous Substances: Not listed.

STATE REGULATIONS:

California Proposition 65: Not regulated.

CANADIAN: Regulations

WHMIS Classification: Not determined

EUROPEAN Regulations:

EC Classification (assigned): Xn – Harmful

EC Risk Phrases:

R65 – Harmful: may cause lung damage if swallowed.

EC Safety Phrases:

S23 – Do not breathe gas, fumes, vapor or spray

S24 – Avoid contact with skin.

S62 – If swallowed, do not induce vomiting: seek medical advice immediately and show this container of label.

National Inventory Status

U.S. Inventory (TSCA): Listed on inventory.

TSCA 12 (b) Export Notification: Not listed.

16. OTHER INFORMATION

Sources: Chem ADVISOR, Inc., MSDS *Kerosene*, 03 December 2009

Disclaimer: Physical and chemical data contained in this MSDS are provided only for use in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references; however, NIST does not certify the data in the MSDS. The certified values for this material are given in the NIST Certificate of Analysis.