

SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

Product Identifier

SRM Number: 1616b
SRM Name: Sulfur in Kerosene (Low Level)
Other Means of Identification: Not applicable.

Recommended Use of This Material and Restrictions of Use

This Standard Reference Material (SRM) is intended for use in the evaluation of methods and the calibration of instruments used in the determination of total sulfur in fuel oils or materials of a similar matrix. SRM 1616b consists of a special low sulfur kerosene (No. 1-K) suitable for use in non-flue-connected burner appliances and for use in wick-fed illuminating lamps, as described in ASTM D 3699-92 Specification for Kerosene. A unit of SRM 1616b consists of 100 mL of the low sulfur kerosene in an amber glass bottle.

Company Information

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2. HAZARDS IDENTIFICATION

Classification

Physical Hazard:	Flammable Liquid	Category 3
Health Hazard:	Skin Irritation	Category 2
	Aspiration Hazard	Category 1

Label Elements

Symbol



Signal Word

DANGER

Hazard Statement(s)

H226 Flammable liquid and vapor.
 H304 May be fatal if swallowed and enters airways.
 H315 Causes skin irritation.

Precautionary Statement(s)

P210 Keep away from heat, sparks, open flames, and hot surfaces. – No smoking.
 P233 Keep container tightly closed.
 P241 Use explosion-proof equipment.
 P242 Use only non-sparking tools.
 P243 Take precautionary measures against static discharge.
 P280 Wear protective gloves and eye protection.
 P301+310 If swallowed: Immediately call a doctor.
 P331 Do NOT induce vomiting.
 P303+P353+P361 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
 P332+P313 If skin irritation occurs: Get medical attention.

P403+P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.

P501 Dispose of contents and container according to local regulations.

Hazards Not Otherwise Classified: None.

Ingredients(s) with Unknown Acute Toxicity: None.

3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Substance: Kerosene

Other Designations: Fuel oil No. 1; coal oil; range oil; kerosine; kerosene odorless.

Components are listed in compliance with OSHA's 29 CFR 1910.1200.

Hazardous Component(s)	CAS Number	EC Number (EINECS)	Nominal Mass Concentration (%)
Kerosene	8008-20-6	232-366-4	100

4. FIRST AID MEASURES

Description of First Aid Measures

Inhalation: If adverse effects occur, remove to well-ventilated (uncontaminated) area. If breathing is difficult, qualified personnel may administer oxygen. If not breathing, qualified personnel should give artificial respiration. Seek immediate medical attention.

Skin Contact: Rinse affected skin with water for at least 15 minutes and then wash thoroughly with soap or mild detergent and water. If skin irritation persists, seek medical aid and bring the container or label.

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

Ingestion: Aspiration hazard; do not induce vomiting. If vomiting occurs, keep head lower than hips to help prevent aspiration. Get immediate medical attention. Give artificial respiration if not breathing.

Most Important Symptoms/Effects, Acute and Delayed

Inhalation: Irritation, cough, ringing in the ears, nausea, chest pain, headache, drowsiness, dizziness, disorientation, hyperactivity, mood swings, loss of coordination, bluish skin color, lung congestion, convulsions, and coma.

Skin Contact: Irritation, absorption; long-term exposure may result in blood disorders.

Eye Contact: No information available.

Ingestion: Gastrointestinal irritation, vomiting, diarrhea, stomach pain, irregular heartbeat, headache, drowsiness, dizziness, loss of coordination, coma, aspiration hazard.

Indication of any immediate medical attention and special treatment needed, if necessary: If any of the above symptoms are present, seek immediate medical attention.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Moderate fire hazard. Vapor/air mixtures are explosive above the flash point. Vapors or gases may ignite at distant ignition sources and flash back. Electrostatic discharges may be generated by flow or agitation resulting in ignition or explosion. See Section 9, "Physical and Chemical Properties" for flammability properties.

Extinguishing Media

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

Unsuitable: None listed.

Specific Hazards Arising from the Chemical: Not applicable.

Special Protective Equipment and Precautions for Fire-Fighters: Move container from fire area if it can be done without personal risk. Avoid inhalation of material or combustion by-products. Wear full protective clothing and NIOSH-approved self-contained breathing apparatus (SCBA).

NFPA Ratings (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health = 2

Fire = 2

Reactivity = 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: Use suitable protective equipment; see Section 8, “Exposure Controls and Personal Protection”. Keep out of waters supplies and sewers.

Methods and Materials for Containment and Clean up: Avoid heat, flames, sparks and other sources of ignition. Stop leak if possible without personal risk, with water spray to reduce vapors. Absorb spilled material with sand or non-combustible material and collect in appropriate container for disposal.

7. HANDLING AND STORAGE

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

Storage and Incompatible Materials: Store in a well-ventilated area. Keep separated from incompatible substances (see Section 10, “Stability and Reactivity”).

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits

OSHA (PEL): No occupational exposure limits listed.

ACGIH (TLV): 200 mg/m³ TWA, application restriction to conditions in which there are negligible aerosol exposures, total hydrocarbon vapors.

Skin – potential significant contribution to overall exposure by the cutaneous route.

NIOSH (REL): 100 mg/m³ TWA

Engineering Controls: Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

Protection Measures: In accordance with OSHA 29 CFR 1910.132, subpart I. Wear appropriate Personal Protective Equipment (PPE) to minimize exposure to this material.

Respiratory Protection: If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29CFR 1910.134 must be followed. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

Eye Protection: Splash resistant safety goggles and emergency eyewash are recommended. Provide emergency eyewash fountain and quick drench shower in the immediate work area.

Skin and Body Protection: Chemical resistant clothing and gloves are recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Descriptive Properties

Molar Mass (g/mol)
Molecular Formula
Appearance (physical state, color, etc.)

Odor
Odor threshold

pH
Evaporation rate

Melting point/freezing point
Relative Density as Specific Gravity (water = 1)
Density^(a)

Vapor Pressure
Vapor Density (air = 1)
Kinematic Viscosity^(a)
Solubilities

Partition coefficient (n-octanol/water)

Thermal Stability Properties

Autoignition Temperature
Thermal Decomposition
Initial boiling point and boiling range
Explosive Limits, LEL (Volume %)
Explosive Limits, UEL (Volume %)
Flash Point^(a)
Flammability (solid, gas)

Kerosene
≈170
not applicable
colorless to brown liquid;
oily free-flowing
petroleum odor
not available
not available
not available
-18 °C (-0.4 °F)
0.8
827.1 kg/m³ at 15 °C
39.5 API at 60 °F
5 mmHg at 38 °C
4.5
1.617 cSt at 40 °C
water: insoluble;
soluble in petroleum solvents
not available

210 °C (410 °F)
not available
151 °C to 301 °C (303 °F to 574 °F)
0.7
5
58.9 °C (138 °F)
not applicable

^(a)Property was determined for SRM 1616b (see Certificate of Analysis).

10. STABILITY AND REACTIVITY

Reactivity: Stable at normal temperatures and pressure.

Stability: X Stable Unstable

Possible Hazardous Reactions: Not applicable.

Conditions to Avoid: Avoid heat, flames, sparks, and other sources of ignition. Containers may rupture or explode if exposed to heat. Keep out of water supplies and sewers.

Incompatible Materials: Oxidizing materials, halogens.

Hazardous Decomposition: Oxides of carbon.

Hazardous Polymerization: Will Occur X Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Exposure: X Inhalation X Skin X Ingestion

Symptoms Related to the Physical, Chemical and Toxicological Characteristics: Eye or skin irritation and possible skin disorders. Lung damage and death are possible if aspirated into lungs.

Potential Health Effects (Acute, Chronic, and Delayed)

Inhalation: Irritation hazard is low unless heated or misted. High concentrations of vapor or mist may cause irritation and possibly systems of central nervous system depression. Prolonged contact may cause irritation, bronchitis, and pneumonia.

Skin Contact: May cause defatting of the skin resulting in dryness, irritation, dermatitis and edema.

Eye Contact: No adverse effects reported.

Ingestion: If aspirated, lung damage and death may occur. Ingestion may cause irritation or burning sensation in digestive tract and other digestive discomfort. In large quantities, central nervous system depression may occur.

Numerical Measures of Toxicity

Acute Toxicity: Not classified.

Rat, Oral, LD50: >5000 mg/kg

Rat, Inhalation, LC50: >5000 mg/m³ (4 h); >5.28 mg/L (4 h)

Rabbit, Dermal, LD50: >2000 mg/kg

Skin Corrosion/Irritation: Category 2.

Rabbit, skin: 500 mg severe.

Rabbits treated for three days, with 3 mL/kg each day experienced hair loss, scaling, cracking of the epidermis, but no systemic toxicity.

Serious Eye Damage/Irritation: Not classified.

Rabbit, eyes: 100 µL (24 h) mild.

Respiratory Sensitization: No data available.

Skin Sensitization: No data available.

Germ Cell Mutagenicity: No data available.

Carcinogenicity: Not classified.

Listed as a Carcinogen/Potential Carcinogen _____ **Yes** _____ **X** **No**

Kerosene is not listed in NTP or OSHA as a carcinogen.

IARC lists distillate (light fuel oils, kerosene) as Group 3, *not classifiable as to their carcinogenicity*.

ACGIH lists kerosene as A3 – confirmed animal carcinogen with unknown relevance to humans.

Mutagenic data: Mouse, 350 mg/kg for 14 days, intermittent
Salmonella typhimurium (+S9) 25 µL per plate

Reproductive Toxicity: No data available.

Specific Target Organ Toxicity, Single Exposure: No data available.

Specific Target Organ Toxicity, Repeated Exposure: No data available.

Aspiration Hazard: Category 1 (Kinematic viscosity is listed in Section 9, “Physical and Chemical Properties”).

12. ECOLOGICAL INFORMATION

Ecotoxicity Data:

Aquatic Toxicity, lethal loading rates: Fish 18 – 25 mg/L; Invertebrates 1.4 – 21 mg/L; Algae 5 – 11 mg/L.

Persistence and Degradability: No data available.

Bioaccumulative Potential: No data available.

Mobility in Soil: No data available.

Other Adverse effects: No data available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose in accordance with all applicable federal, state, and local regulations. Subject to disposal regulations 40 CFR 262, Hazardous waste number, D001.

14. TRANSPORTATION INFORMATION

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

15. REGULATORY INFORMATION

U.S. Regulations

CERCLA Sections 102a/103 (40 CFR 302.4): Not regulated.

SARA Title III Section 302 (40 CFR 355.30): Not regulated.

SARA Title III Section 304 (40 CFR 355.40): Not regulated.

SARA Title III Section 313 (40 CFR 372.65): Not regulated.

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

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21)

ACUTE HEALTH:	Yes
CHRONIC HEALTH:	Yes
FIRE:	Yes
REACTIVE:	No
PRESSURE:	No

State Regulations

California Proposition 65: Not listed.

U.S. TSCA Inventory: Kerosene is listed.

TSCA 12(b), Export Notification: Not listed.

Canadian Regulations: WHMIS Information: Not provided for this material.

16. OTHER INFORMATION

Issue Date: 12 December 2018

Sources: ChemADVISOR, Inc., SDS *Kerosene*, 09 December 2015.

The American Petroleum Institute, Petroleum HPV Testing Group, *Kerosene/Jet Fuel Category Assessment Document*, Submitted to the US EPA on 21 September 2010.

Key of Acronyms:

ACGIH	American Conference of Governmental Industrial Hygienists	NTP	National Toxicology Program
CAS	Chemical Abstracts Service	OSHA	Occupational Safety and Health Administration
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	PEL	Permissible Exposure Level
CFR	Code of Federal Regulations	RCRA	Resource Conservation and Recovery Act
DOT	Department of Transportation	REL	Recommended Exposure Limit
EINECS	European Inventory of Existing Commercial Chemical Substances	RQ	Reportable Quantity
EPCRA	Emergency Planning and Community Right-to-Know Act	RTECS	Registry of Toxic Effects of Chemical Substances
IARC	International Agency for Research on Cancer	SARA	Superfund Amendments and Reauthorization Act
IATA	International Air Transport Association	SCBA	Self-Contained Breathing Apparatus
IDLH	Immediately Dangerous to Life and Health	SRM	Standard Reference Material
LC50	Lethal Concentration	STEL	Short Term Exposure Level
LD50	Median Lethal Dose or Lethal Dose, 50 %	TLM	Median tolerance level
LEL	Lower Explosive Limit	TLV	Threshold Limit Value
MSDS	Material Safety Data Sheet	TPQ	Threshold Planning Quantity
NFPA	National Fire Protection Association	TSCA	Toxic Substances Control Act
NIOSH	National Institute for Occupational Safety and Health	TWA	Time Weighted Average
NIST	National Institute of Standards and Technology	UEL	Upper Explosive Limit
n.o.s.	Not Otherwise Specified	WHMIS	Workplace Hazardous Materials Information System

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

Users of this SRM should ensure that the SDS in their possession is current. This can be accomplished by contacting the SRM Program: telephone (301) 975-2200; fax (301) 948-3730; e-mail srmmsds@nist.gov; or via the Internet at <https://www.nist.gov/srm>.