

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: 1918
MSDS Number: 1918
SRM Name: Mercury Porosimeter
Intrusion Standard

Date of Issue: 29 December 2011

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Description: This Standard Reference Material (SRM) consists of one vial containing approximately 12 g of an extruded silica-alumina compound. A unit of SRM 1918 is intended for use in the calibration of mercury porosimeter intrusion analytical instruments.

Substance (Other Designations):

Aluminum oxide (alumina; alundum; dialuminum trioxide; alumite; martoxin; Al₂O₃).
Silicon dioxide [amorphous silica; silica; silicon (IV) oxide; SiO₂].

2. HAZARDS IDENTIFICATION

NFPA Ratings (Scale 0–4): Health = 1 Fire = 0 Reactivity = 0

Note: Information contained in this MSDS is for aluminum oxide and silicon dioxide, the main components. The actual effects of the material may differ from the individual components.

Major Health Hazards: Cancer (in humans)^(a).

Physical Hazards: There are no known physical hazards associated with this material.

Potential Health Effects

Inhalation: Acute and chronic: irritation, headache, chest pain, difficulty breathing, digestive disorders, rash, disorientation, bluish skin color, lung damage, kidney disorders, convulsions, and coma.

Skin Contact: Same as listed for inhalation.

Eye Contact: No information available.

Ingestion: Same as listed for inhalation.

Listed as a Carcinogen/Potential Carcinogen

	Yes	No
National Toxicology Program (NTP) Report on Carcinogens	X ^(a)	_____
International Agency for Research on Cancer (IARC) Monographs	X ^(a)	_____
Occupational Safety and Health Administration (OSHA)	X ^(a)	_____

^(a) Silica (quartz and amorphous) is potentially included in this material. NTP lists silica, crystalline, as a known carcinogen; IARC lists silica (quartz) as a Group 1 (carcinogenic to humans); silica (respirable) size is listed by OSHA.

3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Component ^(a)	CAS Number	EC Number (EINECS)	Nominal Concentration (%)
Aluminum oxide	1344-28-1	215-691-6	≤99.8
Silicon dioxide	7631-86-9	231-545-4	≥0.2

^(a) The material is a complex mixture. The components are listed in accordance with OSHA requirements for MSDS information, 29 CFR 1910.1200 (g)(2)(i)(C)(1), with hazardous components (1 %) or carcinogens (0.1 %).

EC Classification: Aluminum oxide and silicon dioxide are not classified.

EC Risk (R No.) and EC Safety (S No.): Not assigned.

4. FIRST AID MEASURES

Inhalation: If adverse effects occur, remove to uncontaminated area. If not breathing, give artificial respiration by qualified personnel. Seek immediate medical attention.

Skin Contact: Rinse affected area with soap and water for at least 15 minutes. Seek medical assistance if necessary.

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

Ingestion: If a large amount is swallowed, seek medical attention.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Negligible fire hazard.

Extinguishing Media: Use extinguishing agents appropriate to surrounding fire.

Fire Fighting: Avoid inhalation of combustion by-products.

Flash Point (°C): Not applicable.

Autoignition Temp. (°C): Not applicable.

Flammability Limits in Air

UPPER (Volume %): Not applicable.

LOWER (Volume %): Not applicable.

6. ACCIDENTAL RELEASE MEASURES

Occupational Release: Collect spilled material in appropriate container for proper disposal.

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

7. HANDLING AND STORAGE

Storage: Store and handle in accordance with all current regulations and standards.

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

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits

Component: Aluminum oxide

OSHA PEL (TWA): 15 mg/m³ (total dust)

OSHA PEL (TWA): 5 mg/m³ (respirable fraction)

ACGIH (TWA): 1 mg/m³ (respirable fraction, related to aluminum insoluble compounds)

Component: Silicon dioxide (as quartz)

OSHA PEL (TWA): (30)/(% SiO₂ + 2) mg/m³ (total dust)

OSHA PEL (TWA): (10)/(% SiO₂ + 2) mg/m³ (respirable fraction)

ACGIH (TWA): 0.025 mg/m³ (respirable fraction)

NIOSH (TWA): 0.05 mg/m³ (respirable dust)

NIOSH (IDLH): 50 mg/m³ (respirable dust)

Ventilation: Local exhaust ventilation system.

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

Eye Protection: Wear safety goggles. An eyewash station and drench shower should be readily available near the handling and use areas.

Personal Protection: Chemically resistant gloves and clothing are recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: White to gray powder, odorless.

Molecular Formula: Not applicable.

Specific Gravity (water = 1): Not applicable.

Water Solubility: Insoluble.

10. STABILITY AND REACTIVITY

Stability: Stable Unstable

Stable at normal temperature and pressure.

Conditions to Avoid: Avoid generating dust.

Incompatible Materials: Oxidizing materials.

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

Hazardous Decomposition: Miscellaneous decomposition products.

Hazardous Polymerization: Will Occur Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Entry: Inhalation Skin Ingestion

Toxicity Data: May cause irritation and a cough.

Component: Aluminum Oxide

Rat, Oral LD₅₀: >5000 mg/kg

Component: Silicon dioxide (as quartz)

Rat, Oral LD₅₀: 500 mg/kg

Health Effects: See Section 2: "Hazards Identification" for potential health effects.

Target Organs: Respiratory tract.

Mutagen/Teratogen:

Component: Aluminum oxide

The following endpoints are listed by the Registry of Toxic Effects of Chemical Substances (RTECS).

Tumorigenic effects: Rat, Implant TD: 200 mg/kg.

Component: Silicon dioxide (as quartz)

Quartz has been studied for tumorigenic and mutagenic effects. The following endpoints are listed in the RTECS.

Tumorigenic effects: Rat, Inhalation TClO: 50 mg/m³ (6 h).

Mutagenic effects: Human, 120 mg/L (24 h); 40 µg/cm².

Medical Conditions Generally Aggravated by Exposure: Respiratory disorders.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data

Component: Aluminum oxide

No ecotoxicity data available.

Component: Silicon dioxide

Aquatic toxicity

Fish, Zebrafish (*Brachydanio rerio*), LC₅₀: 5000 mg/L 96 h [static]

Algae (*Pseudokirchneriella subcapitata*), EC₅₀: 440 mg/L 72 h

Invertebrate, Water Flea (*Ceriodaphnia dubia*), EC₅₀: 7600 mg/L 48 h

13. DISPOSAL CONSIDERATIONS

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

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: Not regulated by DOT or IATA.

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

STATE REGULATIONS

California Proposition 65: Known as cancer causing for silica crystalline particles of respirable size.

CANADIAN REGULATIONS

WHMIS Information: Not provided for this information.

EUROPEAN REGULATIONS

EC Classification: Not classified.
EC Risk and Safety Phrases: Not assigned.

NATIONAL INVENTORY STATUS

U.S. Inventory (TSCA): Aluminum oxide and silicon dioxide are listed.
TSCA 12(b), Export Notification: Not listed.

16. OTHER INFORMATION

Sources: ChemAdvisor, Inc., MSDS *Aluminum Oxide*, 16 September 2011.
ChemAdvisor, Inc., MSDS *Silicon Dioxide*, 16 September 2011.

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.