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: 1878a
MSDS Number: 1878a
SRM Name: Respirable Alpha Quartz (Quantitative X-Ray Powder Diffraction Standard)

Date of Issue: 09 March 2012

Telephone: 301-975-2200
FAX: 301-926-4751
E-mail: SRMMSDS@nist.gov

Emergency Telephone ChemTrec:
1-800-424-9300 (North America)
+1-703-527-3887 (International)

Description: This Standard Reference Material (SRM) is intended for use in preparation of calibration standards for quantitative analyses of α-quartz by X-ray powder diffraction in accordance to National Institute for Occupational Safety and Health (NIOSH) Analytical Method 7500 [1] (or equivalent). A unit of SRM 1878a consists of approximately 5 g of respirable powder bottled in an argon atmosphere.

Substance: α-Quartz

Other Designations: α-Quartz (silica; silicon dioxide; quartz; white silica sand; silicic anhydride; SiO_2)

2. HAZARDS IDENTIFICATION

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

Major Health Hazards: Cancer (in humans)[a]

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

Potential Health Effects (Acute and Chronic):

Inhalation: Acute: mechanical irritation; chronic: same as acute and chest pain, weight loss, difficulty breathing, digestive disorders, bluish skin color, lung damage, cancer, and death.

Skin Contact: Mechanical irritation.

Eye Contact: Mechanical Irritation and possible eye damage.

Ingestion: No information available on severe effects.

Listed as a Carcinogen/Potential Carcinogen

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens	X[a]	
In the International Agency for Research on Cancer (IARC) Monographs	X[b]	
By the Occupational Safety and Health Administration (OSHA)		X

[a] NTP lists silica, crystalline, as a known carcinogen.
[b] IARC lists silica (quartz) as a Group 1 (carcinogenic to humans).

3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Component	CAS Number	EC Number (EINECS)	Nominal Concentration (%)
Quartz	14808-60-7	238-878-4	100

NOTE: The material's median particle size (1.6 μm) is below the respirable size limits (10 μm or 10 microns, respirable) established by the ACGIH, Appendix D.

EC Classification: Quartz - T.

EC Risk (R No.): 49.

EC Safety (S No.): 24, 46.

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

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: Minimize dust. See Section 8 "Exposure Controls and Personal Protection".

8. Exposure Controls and Personal Protection

Exposure Limits

OSHA PEL (TWA): (30)/(% SiO_2 + 2) mg/m^3 (total dust)
OSHA PEL (TWA): (10)/(% SiO_2 + 2) mg/m^3 (respirable fraction)
ACGIH (TWA): 0.025 mg/m^3 (respirable fraction)
NIOSH (TWA): 0.05 mg/m^3 (respirable dust)
NIOSH (IDLH): 50 mg/m^3 (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: Fine white powder, odorless.

Molecular Formula: SiO_2

Molar Mass (g/mol): 60.09

Density: 2.6 – 2.7 g/cm^3

Water Solubility: Insoluble.

Solvent Solubility: Hydrofluoric acid.

10. STABILITY AND REACTIVITY

Stability: X 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 X Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Entry: X Inhalation ____ Skin ____ Ingestion

Toxicity Data:

Rat, Oral LD_{50}: 500 mg/kg

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

Target Organs: Respiratory tract.

Mutagen:

The following end points have been published by Registry of Toxic Effects of Chemical Substances (RTECS): 160 µg/cm^2 hamster.

Tumorogenic:

The following end points have been published by RTECS: 4 g/kg Implant Mouse TDLo; 50 mg/m^3 Inhalation Rat TCLo (6 h).

Medical Conditions Generally Aggravated by Exposure: Respiratory disorders.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data: No ecotoxicity data listed.

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: T - Toxic.

EC Risk Phrases:

R49 – May cause cancer by inhalation.

EC Safety Phrases:

S24 – Avoid contact with skin.
S46 –If swallowed, seek medical advice immediately and show this container of label.

NATIONAL INVENTORY STATUS

U.S. Inventory (TSCA): Not listed.

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

16. OTHER INFORMATION

Sources: ChemADVISOR, MSDS *Quartz*, 20 December 2011.