

**SAFETY DATA SHEET**

**1. SUBSTANCE AND SOURCE IDENTIFICATION**

**Product Identifier**

**SRM Number:** 76a  
**SRM Name:** Burnt Refractory  
**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 checking chemical methods of analysis and in calibration of instrumental methods of analysis. A unit of SRM 76a consists of a bottle containing 75 g of fine powder (< 0.15 mm).

**Company Information**

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

Telephone: 301-975-2200  
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 1-800-424-9300 (North America)  
 +1-703-527-3887 (International)

**2. HAZARDS IDENTIFICATION**

**Classification**

**Physical Hazard:** Not classified.  
**Health Hazard:** Carcinogen Category 1  
 STOT, Repeated Exposure Category 1

**Label Elements**

**Symbol**



**Signal Word**

DANGER

**Hazard Statement(s):**

H350 May cause lung cancer.  
 H372 Causes damage to lungs through prolonged or repeated inhalation.

**Precautionary Statement(s):**

P201 Obtain special instructions before use.  
 P202 Do not handle until all safety precautions have been read and understood.  
 P260 Do not breathe dust.  
 P264 Wash hands thoroughly after handling.  
 P270 Do not eat, drink or smoke when using this product.  
 P280 Wear protective gloves, protective clothing, and eye protection.  
 P308 + P313 If exposed or concerned: Get medical attention.  
 P405 Store locked up.  
 P501 Dispose of contents and container according to local regulations.

**Hazards Not Otherwise Classified:** Not applicable.

**Ingredients(s) with Unknown Acute Toxicity:** Not applicable.

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### 3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

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**Substance:** Mixture of kaolinite and illite.

**Other Designations:** none.

This material is a naturally occurring complex mixture, prepared as described in the NIST Certificate of Analysis. Components are listed in compliance with OSHA's 29 CFR 1910.1200; the values listed on the NIST Certificate of Analysis are reported as oxides based on the methods of analysis.

Hazardous Component(s)	CAS Number	EC Number (EINECS)	Nominal Mass Concentration (%)
Kaolinite	1318-74-7	215-286-4	<98
Illite	12173-60-3	not applicable	>1
Quartz <sup>(a)</sup>	14808-60-7	238-878-4	>0.1

<sup>(a)</sup> Quartz is an inherent component of illite

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### 4. FIRST AID MEASURES

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**Description of First Aid Measures:**

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

**Skin Contact:** Wash skin with soap and water.

**Eye Contact:** Flush eyes with water for at least 15 minutes. If necessary, seek medical attention.

**Ingestion:** If adverse effects occur after ingestion, seek medical treatment.

**Most Important Symptoms/Effects, Acute and Delayed:** May cause irritation.

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

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### 5. FIRE FIGHTING MEASURES

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**Fire and Explosion Hazards:** Negligible fire hazard. Avoid generating dust. See Section 9, "Physical and Chemical Properties" for flammability properties.

**Extinguishing Media:**

Suitable: Use extinguishing media appropriate for surrounding fire.

Unsuitable: None listed.

**Specific Hazards Arising from the Chemical:** None listed.

**Special Protective Equipment and Precautions for Fire-Fighters:** Avoid inhalation of material or combustion byproducts. 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 = 1

Fire = 0

Reactivity = 0

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### 6. ACCIDENTAL RELEASE MEASURES

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**Personal Precautions, Protective Equipment and Emergency Procedures:** Any accumulated material on surfaces should be removed and properly disposed of. Use suitable protective equipment; see Section 8, "Exposure Controls and Personal Protection".

**Methods and Materials for Containment and Clean up:** Collect spilled material in appropriate container for disposal. Keep out of water supplies and sewers. Keep unnecessary people away, isolate hazard area and deny entry.

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### 7. HANDLING AND STORAGE

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**Safe Handling Precautions:** Minimize dust generation and accumulation on surfaces. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. See Section 8, "Exposure Controls and Personal Protection".

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

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## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

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### Exposure Limits for Quartz:

ACGIH (TLV):	0.025 mg/m <sup>3</sup> (TWA) [respirable fraction]
OSHA (PEL):	(30)/(%SiO <sub>2</sub> + 2) mg/m <sup>3</sup> (TWA) [total dust] (250)/(%SiO <sub>2</sub> + 5) mppcf (TWA) [respirable fraction] (10)/(%SiO <sub>2</sub> + 2) mg/m <sup>3</sup> (TWA) [respirable fraction]
NIOSH (REL):	0.05 mg/m <sup>3</sup> (TWA) [respirable dust] 50 mg/m <sup>3</sup> (IDLH) [respirable dust]

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

**Personal Protection:** 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/Face Protection:** Wear splash resistant safety goggles with a face shield. An eye wash station should be readily available near areas of use.

**Skin and Body Protection:** Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Chemical-resistant gloves should be worn at all times when handling chemicals.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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### Descriptive Properties:

**Appearance**  
(physical state, color, etc.):

### SRM 76a

fine powder

**Molecular Formula:**

not applicable

**Molar Mass (g/mol):**

not applicable

**Odor:**

not available

**Odor threshold:**

not available

**pH:**

not available

**Evaporation rate:**

not applicable

**Melting point/freezing point (°C):**

not available

**Specific Gravity (water=1)**

not available

**Vapor Pressure (mmHg):**

not applicable

**Vapor Density (air = 1):**

not applicable

**Viscosity (cP):**

not applicable

**Solubility(ies):**

not available

**Partition coefficient (n-octanol/water):**

not available

**Particle Size:**

<0.15 mm

### Thermal Stability Properties:

**Autoignition Temperature (°C):**

not available

**Thermal Decomposition (°C):**

not available

**Initial boiling point and boiling range (°C):**

not available

**Explosive Limits, LEL (Volume %):**

not available

**Explosive Limits, UEL (Volume %):**

not available

**Flash Point (°C):**

not available

**Flammability (solid, gas):**

not available

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## 10. STABILITY AND REACTIVITY

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**Reactivity:** Stable at normal temperatures and pressure.

**Stability:**  Stable  Unstable

**Possible Hazardous Reactions:** None listed.

**Conditions to Avoid:** Avoid generating dust.

**Incompatible Materials:** Bases, halogens, acids, metal salts, metal, oxidizing materials, combustible materials.

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

**Hazardous Decomposition:** Thermal decomposition will produce oxides of carbon.

**Hazardous Polymerization:**  Will Occur  Will Not Occur

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## 11. TOXICOLOGICAL INFORMATION

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**Route of Exposure:**  Inhalation  Skin  Ingestion

**Symptoms Related to the Physical, Chemical and Toxicological Characteristics:** May cause irritation, lung damage, silicosis, and cancer.

**Potential Health Effects (Acute, Chronic and Delayed):**

**Inhalation:** Inhalation of nuisance dust has little adverse effect on the lungs. Acute exposure to fine particles containing respirable quartz may result irritation; chronic exposure may result in irritation, chest pain, weight loss, difficulty breathing, digestive disorders, bluish skin color, lung damage, cancer, and death.

**Skin Contact:** May cause irritation due to mechanical abrasion.

**Eye Contact:** May cause irritation due to mechanical abrasion.

**Ingestion:** No data available.

**Numerical Measures of Toxicity:**

**Acute Toxicity:** Not classified.

Quartz, Rat, Oral LD50: 500 mg/kg

**Skin Corrosion/Irritation:** Not classified; no data available.

**Serious Eye damage/ Eye irritation:** Not classified; no data available.

**Respiratory Sensitization:** Not classified; no data available.

**Skin Sensitization:** Not classified; no data available.

**Germ Cell Mutagenicity:** Not classified; no data available.

**Carcinogenicity:** Category 1

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

Silica dust, crystalline, in the form of quartz is listed by IARC, *Group 1, carcinogenic to humans*. Quartz is listed by NTP as a *known human carcinogen (respirable size)*. Quartz is not listed by OSHA as a designated carcinogen.

**Reproductive Toxicity:** Not classified.

**Specific Target Organ Toxicity (STOT), Single Exposure:** Not classified; no data available.

**Specific Target Organ Toxicity (STOT), Repeated Exposure:** Category 1

Cumulative exposure may result in reduced lung capacity and silicosis.

**Aspiration Hazard:** Not classified.

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## 12. ECOLOGICAL INFORMATION

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**Ecotoxicity Data:** No data available.

**Persistence and Degradability:** No data available.

**Bioaccumulative Potential:** No data available.

**Mobility in Soil:** No data available.

**Other Adverse effects:** No data available.

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## 13. DISPOSAL CONSIDERATIONS

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

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## 14. TRANSPORTATION INFORMATION

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

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## 15. REGULATORY INFORMATION

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### 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: WARNING! This product contains a chemical [quartz (airborne particles of respirable size)] known to the state of California to cause cancer.

**U.S. TSCA Inventory:** Kaolinite and quartz are listed.

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

### Canadian Regulations:

WHMIS Information: Not provided for this material.

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## 16. OTHER INFORMATION

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**Issue Date:** 25 June 2014

**Sources:** Center for Disease Control (CDC), NIOSH Pocket Guide to Chemical Hazards, *Particulates not otherwise regulated*; available at <http://www.cdc.gov/niosh/npg/npgd0480.html> (accessed June 2014).

National Institutes of Health, U.S. National Library of Medicine, Toxicology Data Network (TOXNET), *ChemIDplus, Illite*, available at <http://chem.sis.nlm.nih.gov/chemidplus/rn/12173-60-3> (accessed June 2014)

ChemAdvisor, Inc., MSDS *Quartz*, 21 March 2014.

ChemAdvisor, Inc., MSDS *Kaolinite*, 21 March 2014.

### Key of Acronyms:

ACGIH	American Conference of Governmental Industrial Hygienists	NRC	Nuclear Regulatory Commission
ALI	Annual Limit on Intake	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 Limit
CFR	Code of Federal Regulations	RCRA	Resource Conservation and Recovery Act
DOT	Department of Transportation	REL	Recommended Exposure Limit
EC50	Effective Concentration, 50 %	RM	Reference Material
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 Transportation Agency	SCBA	Self-Contained Breathing Apparatus
IDLH	Immediately Dangerous to Life and Health	SRM	Standard Reference Material
LC50	Lethal Concentration, 50 %	STEL	Short Term Exposure Limit
LD50	Lethal Dose, 50 %	TLV	Threshold Limit Value
LEL	Lower Explosive Limit	TPQ	Threshold Planning Quantity
MSDS	Material Safety Data Sheet	TSCA	Toxic Substances Control Act
NFPA	National Fire Protection Association	TWA	Time Weighted Average
NIOSH	National Institute for Occupational Safety and Health	UEL	Upper Explosive Limit
NIST	National Institute of Standards and Technology	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 certified 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](mailto:srmmsds@nist.gov); or via the Internet at <http://www.nist.gov/srm>.