

## SAFETY DATA SHEET

# Ref. Mat'l. Glass SA

Date of Preparation: 06/24/2014

SDS #: 004-16818-00MSDS

### SECTION 1: IDENTIFICATION

**Product Identification:** Ref. Mat'l. Glass SA, SiO<sub>2</sub>

**CAS Number:** 14808-60-7

**Other Designations:** Not applicable

**Volumes:** None

**Recommended Use:** Reference material

**Restrictions:** For laboratory use only.

**Supplier Information:**

Micromeritics Instrument Corp.  
4356 Communications Drive  
Norcross, GA 30093-2901 USA

Contact: Human Resources  
Phone: (770) 662-3636  
Fax: (770) 662-3696

**Manufacturer:** U.S. Silica Company, PO Box 187, Berkeley Springs, WV 25411 (304) 258-2500  
FAX: (304) 258-8295

### SECTION 2: HAZARDS IDENTIFICATION

**GHS Classification:** Category 2 Carcinogenicity, Category 2 Specific target organ toxicity-repeated exposure, Inhalation

**Signal word:** Danger

**Hazard Statements:**

H350: May cause cancer.

H372: Causes damage to organs through prolonged or repeated exposure.

**Pictograms:**



**Precautionary Statements:**

P201: Obtain special instructions before use.

P202: Do not handle until all safety precautions have been read and understood.

P260: Do not breathe dust/fume/gas/mist/vapors/spray.

P264: Wash hands thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

P281: Use personal protective equipment as required.

P308+P313: IF exposed or concerned: Get medical advice/attention.

P314: Get medical advice/attention if you feel unwell.

P405: Store locked up.

P501: Dispose of contents/container in accordance with local/regional/national/international regulations.

### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

| Ingredient Name             | CAS Number | % wt         |
|-----------------------------|------------|--------------|
| Crystalline silica (quartz) | 14808-60-7 | 99.2% -99.9% |

**Caution:** Crystalline silica exists in several forms, the most common of which is quartz. If crystalline silica (quartz) is heated to more than 870°C it can change to a form of crystalline silica known as trydimite, and if crystalline silica (quartz) is heated to more than 1470°C, it can change to a form of crystalline silica known as cristobalite. Crystalline silica as trydimite and cristobalite are more fibrogenic than crystalline silica as quartz. The OSHA PEL for crystalline silica as trydimite and cristobalite is one-half the PEL for crystalline silica (quartz); the ACGIH TLV for crystalline silica as trydimite and cristobalite is one-half the TLV for crystalline silica as quartz.

**Trace Impurities:**

| Ingredient         | OSHA PEL                                     |                | ACGIH TLV                |                | NIOSH REL                 |                | NIOSH          |
|--------------------|--|----------------|--------------------------|----------------|---------------------------|----------------|----------------|
|                    | TWA  | STEL           | TWA                      | STEL           | TWA                       | STEL           | IDLH           |
| Crystalline Silica | 10 mg/m <sup>3</sup><br>SiO <sub>2</sub> + 2 | none<br>estab. | 0.1<br>mg/m <sup>3</sup> | none<br>estab. | 0.05<br>mg/m <sup>3</sup> | none<br>estab. | none<br>estab. |

### SECTION 4: FIRST-AID MEASURES

**Inhalation:** Remove victim from area of exposure - avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. Seek medical advice if effects persist.

**Skin Contact:** If skin contact occurs, remove contaminated clothing and wash skin with running water. If irritation occurs seek medical advice.

**Eye Contact:** If in eyes, wash out immediately with water. In all cases of eye contamination it is a sensible precaution to seek medical advice.

**Ingestion:** Rinse mouth with water. If swallowed, do NOT induce vomiting. Give a glass of water. Seek medical advice.

**Indication of immediate medical attention and special treatment needed:** Treat symptomatically.

## SECTION 5: FIRE-FIGHTING MEASURES

**Suitable Extinguishing Media:** Not combustible, however, if material is involved in a fire use: Extinguishing media appropriate to surrounding fire conditions.

**Specific hazards arising from the substance or mixture:** Non-combustible material.

**Special protective equipment and precautions for fire-fighters:** Non-combustible material.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

**Emergency procedures/Environmental precautions:** Clear area of all unprotected personnel. If contamination of sewers or waterways has occurred advise local emergency services.

**Personal precautions/Protective equipment/Methods and materials for containment and cleaning up:**

Wear protective equipment to prevent skin and eye contact and breathing in dust. Work up wind or increase ventilation. Cover with damp absorbent (inert material, sand or soil). Sweep or vacuum up, but avoid generating dust. Collect and seal in properly labelled containers or drums for disposal.

## SECTION 7: HANDLING AND STORAGE

**Handling Precautions:** Do not breathe dust. Use adequate ventilation and dust collection. Keep airborne dust concentrations below PEL. Practice good housekeeping. Do not permit dust to collect on walls, floors, sills, ledges, machinery or equipment. Maintain, clean, and fit test respirators in accordance with OSHA regulations. Maintain and test ventilation and dust collection equipment. Wash or vacuum clothing which has become dusty. Also see measure in Section 8.

**Storage Requirements:** Avoid breakage of bagged material or spills of bulk material. See also control measure in Section 8. **Do not use U.S. Silica Company materials for sandblasting.**

The OSHA Hazard Communication Standard, 29 CFR Sections 1910.1200, 1915.99, 1917.28, 1918.90, 1926.59 and 1928.21, and state and local workers or community "right to know" laws and regulations should be strictly followed. **WARN YOUR EMPLOYEES (AND YOUR CUSTOMERS IN CASE OF RESALE) BY POSTING AND OTHER MEANS OF THE HAZARDS AND THE REQUIRED OSHA PRECAUTIONS. PROVIDE TRAINING FOR YOUR EMPLOYEES ABOUT THE OSHA PRECAUTIONS.**

See also American Society for Testing and Materials (ASTM) standard practice E 1132.86, "Standard Practice for Health Requirements Relating to Occupational Exposure to Quartz Dust."

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

**Local Exhaust:** Use sufficient local exhaust to reduce the level of respirable crystalline silica to below the PEL. See AGIH "Industrial Ventilation, A Manual of Recommended Practice" (latest edition).

**Respiratory Protection:** The following specifies the types of respirators which may provide respiratory protection for crystalline silica.

| CONDITION                 | MINIMUM RESPIRATORY PROTECTION *   |
|---------------------------|--|
| Particulate Concentrate   |  |
| 5 X PEL or less           | Any particulate respirator   |
| 10 X PEL or less          | Any particulate respirator, except single-use or quarter-mask respirator.<br>Any fume respirator or high efficiency particulate filter respirator.<br>Any self-contained breathing apparatus.  |
| 50 X PEL or less          | A high efficiency particulate filter respirator with a full face piece.<br>Any supplied-air respirator with a full face piece, helmet or hood.<br>Any self-contained breathing apparatus with a full face piece.   |
| 500 X PEL or less filter. | A powered air-purifying respirator with a high efficiency particulate filter.  |
| >500 X PEL                | A Type C supplied-air respirator operated in pressure-demand or other positive pressure or continuous flow mode.<br>Self-contained breathing apparatus with a full face piece operated in pressure-demand or other positive pressure mode.   |
| Unknown concentrations    | A combination respirator which includes a Type C supplied-air respirator with a full face piece operated in pressure-demand or other positive pressure continuous-flow mode and an auxiliary self-contained breathing apparatus operated in pressure demand or other positive pressure mode. |

**\* Use only NIOSH-approved or MSHA approved equipment. See 29 CFR Section 1910.134 and 42 CFR Section 84.**

See also ANSI standard Z88.2 (latest revision) "American Material Standard for Respiratory Protection."

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

**Flash Point:** Not Applicable

**Flash Point Method:** Not Applicable

**Burning Rate:** Not Applicable

**Autoignition Temperature:** Not Applicable

**LEL:** Not Applicable

**UEL:** Not Applicable

**Physical State:** granular

**Appearance:** White or tan sand; granular, crush or ground

**pH:** Not applicable

**Odor :** None

**Water Solubility:** Insoluble in water.

**Other Solubilities:** Not applicable

**Boiling Point:** 4046°F

**Melting Point:** 3110°F

**Odor Threshold:** Not applicable  
**Vapor Pressure:** None  
**Vapor Density (Air=1):** None  
**Formula Weight:** Not applicable  
**Specific Gravity (H<sub>2</sub>O=1):** 2.65

**Viscosity:** Not applicable  
**Refractive Index:** Not applicable  
**Surface Tension:** Not applicable  
**Evaporation Rate:** Not applicable

## SECTION 10: STABILITY AND REACTIVITY

**Reactivity:** No information available.

**Chemical stability:** Stable under normal conditions of use.

**Possibility of hazardous reactions:** Reacts with alkaline aqueous solutions, hydrofluoric acid, and catechol .

**Conditions to avoid:** Avoid dust generation.

**Incompatible materials:** Incompatible with alkaline aqueous solutions, hydrofluoric acid, and catechol.

**Hazardous decomposition products:** None known.

## SECTION 11: TOXICOLOGICAL INFORMATION

### SILICOSIS:

The major concern is silicosis, caused by the inhalation and retention of respirable crystalline silica dust. Silicosis can exist in several forms, chronic (or ordinary), accelerated, or acute.

Chronic or Ordinary Silicosis is the most common form of silicosis, and can occur after many years of exposure to relatively low levels of airborne respirable crystalline silica dust. It is further defined as either simple or complicated silicosis.

Simple silicosis is characterized by lung lesions (shown as radiographic opacities) less than 1 centimeter in diameter, primarily in the upper lung zones. Often, simple silicosis is not associated with symptoms, detectable changes in lung function or disability.

Simple silicosis may be progressive and may develop into complicated silicosis or progressive massive fibrosis (PMF). Complicated silicosis or PMF is characterized by lung lesions (shown as radiographic opacities) greater than 1 centimeter in diameter. Although there may be no symptoms associated with complicated silicosis or PMF, the symptoms, if present are shortness of breath, wheezing, cough and sputum production. Complicated silicosis or PMF may be associated with decreased lung functions and may be disabling. Advanced complicated silicosis or PMF may lead to death. Advanced complicated silicosis or PMF can result in heart disease secondary to the lung disease (cor pulmonale).

Accelerated Silicosis can occur with exposure to high concentrations of respirable crystalline silica over a relatively short period; the lung lesions can appear within five (5) years of initial exposure. The progression can be rapid. Accelerated silicosis is similar to chronic or ordinary silicosis, except that the lung lesions appear earlier and the progression is more rapid.

Acute Silicosis can occur with exposures to very high concentrations of respirable crystalline silica over a very short time period, sometimes as short as a few months. The symptoms of acute silicosis include progressive shortness of breath, fever, cough and weight loss. Acute silicosis is fatal!

**CANCER:**

IARC - The International Agency for Research on Cancer (“IARC”) concluded that there are “*sufficient evidence* in humans for the carcinogenicity of crystalline silica in the forms of quartz or cristobalite from occupational sources”, and that there is “sufficient evidence in experimental animals for the carcinogenicity of quartz and cristobalite.” The overall IARC evaluation was that “crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans” (Group I). The IARC evaluation noted that “carcinogenicity was not detected in all industrial circumstances studies. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs.” For further information on the IARC evaluation, see IARC Monographs on the Evaluation of Carcinogenic Risk to Humans. Volume 68, “Silica, Some Silicates.” (1997).

NTP - The National Toxicology Program, in its Sixty Annual Report on Carcinogens, concluded that “silica, crystalline (respirable)” may reasonably be anticipated to be a carcinogen, based on sufficient evidence in experimental animals and limited evidence in humans.

OSHA - Crystalline silica (quartz) is not regulated by the U.S. Occupational Safety and Health Administration as a carcinogen. There is substantial literature on the issues of the carcinogenicity of crystalline silica, which the reader should consult for additional information. A summary of the literature is set forth in “Exposure to crystalline silica and risk of lung cancer; the epidemiological evidence” Thorax, Volume 51, pp. 97-102 (1996). The official statement of the American Thoracic Society on the issue of silica carcinogenicity was published in “Adverse Effects of Crystalline Silica Exposure”. American Journal of Respiratory and Critical Care Medicine, volume 155, pp. 761-765 (1997). The official statement concluded that “The available data support the conclusion that silicosis produces increased risk for bronchogenic carcinoma. The cancer risk may also be increased by smoking and other carcinogens in the workplace. Epidemiologic studies provide convincing evidence for increased cancer risk among tobacco smokers with silicosis. Less information is available for never-smokers and for workers exposed to silica but who do not have silicosis. For workers with silicosis, the risks for lung cancer are relatively high and consistent among various countries and investigators. Silicosis should be considered a condition that predisposes workers to an increased risk of lung cancer.” Id. At 763.

**SCLERODERMA:**

There is evidence that exposure to respirable crystalline silica or that the disease silicosis is associated with the increased incidence of scleroderma, an immune system disorder manifested by a fibrosis (scarring) of the lungs, skin and other internal organs. Recently, the American Thoracic Society noted that “there is persuasive evidence relating scleroderma to occupational silica exposures in setting where

there is appreciable silicosis risk.” The following may be consulted for additional information on silica, silicosis and scleroderma (also known as progressive systemic sclerosis): Occupational Lung Disorders, Third Edition, Chapter 12, entitled “Silicosis and Related Diseases”, Parks W. Raymond (1994).” “Adverse Effects of Crystalline Silica Exposure”, American Journal of Respiratory and Critical Care Medicine. Volume 155, pp. 761-765 (1997).

#### **TUBERCULOSIS:**

Individuals with silicosis are at increased risk to develop tuberculosis, if exposed to persons with tuberculosis. The following may be consulted for further information: Occupational Lung Disorders, Third Edition, Chapter 12, entitled “Silicosis and Related Diseases”, Parkes, W. Raymond (1994). “Adverse Effects of Crystalline Silica Exposure”, American Journal of Respiratory and Critical Care Medicine, Volume 155, pp. 761-765 (1997).

#### **NEPHROTOXICITY:**

There are several recent studies suggesting that exposure to respirable crystalline silica or that the disease silicosis is associated with the increased incidence of kidney disorders. The following may be consulted for additional information on silica, silicosis and nephrotoxicity: Occupational Lung Disorders, Third Edition, Chapter 12, entitled “Silicosis and Related Diseases”, Parkes, W. Raymond (1994). “Further evidence of human silica nephrotoxicity in occupationally exposed workers”, British Journal of Industrial Medicine, Volume 50, No. 10, pp. 907-912 (1993). “Adverse Effects of Crystalline Silica Exposure”, American Journal of Respiratory and Critical Care Medicine, Volume 155, pp. 761-765 (1997).

## **SECTION 12: ECOLOGICAL INFORMATION**

**Ecotoxicity:** Crystalline silica (quartz) is not known to be ecotoxic; i.e., there is no data which suggests that crystalline silica is toxic to birds, fish, invertebrates, microorganisms or plants. For additional information on crystalline silica (quartz), see Section 9 (Physical and Chemical Properties) and 10 (Stability and Reactivity) of this SDS.

**Environmental Fate:** Not Available

**Environmental Degradation:** Not Available

**Soil Absorption/Mobility:** Not Available

## **SECTION 13: DISPOSAL CONSIDERATIONS**

**Disposal:** General: The packaging and material may be landfilled; however, material should be covered to minimize generation of airborne dust.

**Disposal Regulatory Requirements:** Crystalline silica (quartz) is not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR Section 261. The above applies to materials as sold by US Silica Company. The material may be contaminated during use, and it is the responsibility of the user to assess the appropriate disposal of the used material.



## SECTION 14: TRANSPORT INFORMATION

### DOT Transportation Data (49 CFR 172.101):

**Shipping Name:** Not regulated

**Shipping Symbols:** Not Applicable

**Hazard Class:** Not regulated

**ID No.:** Not regulated

**Packing Group:** Not Applicable

**Label:** Not Applicable

**Special Provisions (172.102):**

Not Applicable

### Packaging Authorizations

a) **Exceptions:** Not Applicable

b) **Non-bulk Packaging:** Not Applicable

c) **Bulk Packaging:** Not Applicable

### Quantity Limitations

a) **Passenger, Aircraft, or Railcar:** Not Applicable

b) **Cargo Aircraft Only:** Not Applicable

### Vessel Stowage Requirements

a) **Vessel Stowage:** Not Applicable

b) **Other:** Not Applicable

Canadian TDG Hazard Class & PIN – Not regulated

## SECTION 15: REGULATORY INFORMATION

### UNITED STATES (FEDERAL & STATE)

TSCA No: Crystalline silica (quartz) appears on the EPA TSCA inventory under the CAS No. 14808-60-7.

RCRA: Crystalline silica (quartz) is not classified as a hazardous waste under the Resource Conservation and Recovery Act. or its regulations, (40 CFR Section 261).

CERCLA: Crystalline silica (quartz) as a hazardous substance under regulations of the Comprehensive Environmental Resource Compensation and Liability Act 40 CFR 302.4

Emergency Planning and Community Right to Know Act: Crystalline silica (quartz) is not an extremely hazardous substance under Section 302 and is not a toxic chemical subject to the requirements of Section 313.



Clean Air Act: Crystalline silica (quartz) mined and processed by U.S. Silica Company was not processed with or does not contain any Class I or Class II ozone depleting substances.

FDA: Silica is included in the list of substances that may be included in coatings used in food contact surfaces, 21 CFR section 175.300 (b) (3) (xxvi).

NTP: Respirable crystalline silica (quartz) is classified as a probable carcinogen.

OSHA Carcinogen: Crystalline silica (quartz) is not listed.

**State Regulations:**

California Proposition 65: Crystalline silica (quartz) is classified as a substance known to the state of California to be a carcinogen.

**CANADA:** Domestic Substances List: US Silica Company products, as naturally occurring substances, are on the Canadian DSL.

WHMIS Classification: D-2A

**OTHERS:** EINECS No: 231-545-4  
EEC Label (risk/safety phrases): R48/20, R 40/20, S22, S38  
IRAC: Crystalline silica (quartz) is classified in IARC Group I.

*National, state, provincial or local emergency planning, community right to know or other laws, regulations or ordinances may be applicable - consult applicable national, state, provincial or local laws.*

## SECTION 16: OTHER INFORMATION

**Prepared By:** Zuniga, A.

**Revision Notes:** Not Applicable

**Additional Hazard Rating Systems:** Not Applicable

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