
Section 1 – Identification

1.1 Product Identifier

Sand (Whole Grain)

1.1.1 Common Names

Silica Sand, Colorado Silica Sand®, Arena Sand, Artificial Turf Sand, Crystalline Silica, Quartz, Sand, Traction Sand, Frac Sand or Blends.

1.2 Other Means of Identification

White or tan sand; granular solid.

1.3 Recommended Use and Restrictions on Use

1.3.1 Recommended Use

Industries such as gas & oil, fracturing, water filtration, construction materials, cement, non-skid surfaces, fillers, refractories, fiberglass and ceramics, golf course sand, artificial athletic sands, volleyball courts, playgrounds, horse arenas/tracks and insecticides.

1.3.2 Restrictions on Use

⚠WARNING

Do not use for abrasive blasting. This safety data sheet and the information contained herein were not developed for abrasive blasting.

1.4 Manufacturer

Premier Silica, LLC
5205 N. O'Connor Blvd, Suite 200
Irving, TX 75039
Phone: 972-444-9001
Fax: 972-969-3587
www.premiersilica.com

1.5 Emergency Contact

INFOTRAC
Phone: 800-535-5053
In case of an emergency, call this number 24 HOURS a day 7 DAYS a week.

Section 2 – Hazard Identification

2.1 OSHA Regulatory Status

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

2.2 Classification

Carcinogen Category 1A

Specific Target Organ Toxicity – Repeated Exposure Category 1

2.3 Label Elements**DANGER**

May cause cancer via inhalation. Causes damage to lungs through prolonged or repeated exposure via inhalation.

Response: If exposed or concerned: Get medical attention.

Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves and eye protection. Do not breathe dust. In case of inadequate ventilation, wear respiratory protection. Do not eat, drink or smoke when using this product. Wash skin thoroughly after handling.

Disposal: Dispose of contents/container in accordance with local/state/national regulations.

Section 3 – Composition/Information on Ingredients

3.1 Composition of Mixture

Chemical Name	CAS #	% (by weight)
Crystalline Silica (quartz)	14808-60-7	70.0 – 99.5
Aluminum Oxide	1344-28-1	0.0 – 19.0
Iron Oxide	1309-37-1	0.0 – 2.0
Potassium Oxide	12136-45-7	0.0 – 12.0
Calcium Oxide	1305-78-8	0.0 – 1.1
Titanium Oxide	13463-67-7	0.0 – 0.7

Note: Individual composition of hazardous constituents may vary by location and/or production lots.

Section 4 – First-Aid Measures

4.1 Inhalation

If exposed or concerned: Get medical attention. If there is a gross inhalation of crystalline silica (quartz), move the person immediately from the area to fresh air. If person is not breathing, provide artificial respiration.

No specific first-aid is necessary since the adverse health effects associated with exposure to crystalline silica (quartz) result from chronic exposures.

4.2 Eye Contact

Wash immediately with plenty of water. Do not rub eyes. If irritation persists, get medical attention.

4.3 Skin Contact

First-aid is not required.

4.4 Ingestion

First-aid is not required.

4.5 Most Important Symptoms/Effects, Acute and Delayed

Particulates may cause abrasive eye injury. Inhalation of dust may cause respiratory tract irritation. Symptoms of exposure may include cough, sore throat, nasal congestion, sneezing, wheezing and shortness of breath. Prolonged inhalation of respirable crystalline silica above certain concentrations may cause lung diseases, including silicosis and lung cancer.

4.6 Indication of Immediate Medical Attention and Special Treatment Needed

No specific actions are required.

Section 5 – Fire-Fighting Measures

5.1 Extinguishing Media

No specific extinguishing media is required.

5.2 Specific Hazards Arising from the Material

Not combustible. No hazardous thermal decomposition.

5.3 Special Protective Equipment and Precautions for Fire-Fighters

No specific equipment or precautions are required.

Section 6 – Accidental Release Measures

6.1 Description of Necessary Measures

6.1.1 Personal Precautions

Do not breathe dust. Do not rely on your sight to determine if dust is in the air. Respirable crystalline silica dust may be in the air without a visible dust cloud.

6.1.2 Protective Equipment

Wear protective gloves and eye protection. In case of dust exposure, wear personal protective equipment (PPE) specified in Section 8, Exposure Controls/Personal Protection.

6.1.3 Emergency Procedures

Avoid dust formation.

6.2 Methods and Materials for Containment and Cleaning Up

Avoid dry sweeping or using compressed air that can disperse dust in the air. Use water spraying / flushing or vacuum cleaning systems to prevent dust formation. Use closed containers. See Section 13, Disposal Considerations.

Section 7 – Handling and Storage

7.1 Precautions for Safe Handling

⚠WARNING

Do not use for abrasive blasting.

Avoid dust formation. Do not breathe dust. Do not rely on your sight to determine if dust is in the air. Respirable crystalline silica dust may be in the air without a visible dust cloud.

Use adequate exhaust ventilation and dust collection. Keep airborne dust concentrations below permissible exposure limit (PEL). Maintain and test ventilation and dust collection equipment. In case of insufficient ventilation, wear a respirator approved for silica dust when using, handling, storing or disposing of this product or packaging. Maintain, clean, and fit test respirators in accordance with OSHA regulations. See Section 8, Exposure Controls/Personal Protection, for further information on respirators.

Practice good housekeeping. Do not permit dust to collect on walls, floors, sills, ledges, machinery or equipment.

Do not eat, drink or smoke when using this product. Wash skin thoroughly after handling. Remove contaminated clothing and protective equipment prior to entering eating areas. Wash or vacuum clothing that has become dusty.

The OSHA Hazard Communication Standard, 29 CFR Sections 1910.1200, 1915.1200, 1917.28, 1918.90, 1926.59 and 1928.21 and state and local worker or community "right-to-know" laws and regulations should be strictly followed.

For questions regarding safe handling, see Section 1, Identification, to contact the manufacturer.

7.2 Conditions for Safe Storage

Use process enclosures or use sufficient local exhaust or general dilution ventilation to reduce the level of respirable crystalline silica below the exposure limit(s) when loading

and unloading. Keep containers closed and store bags as to avoid accidental tearing or bursting.

7.2.1 Incompatibilities

Keep away from powerful oxidizing agents. Contact with these materials, such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride and oxygen difluoride can cause fires. Silica will dissolve in hydrofluoric acid and produce a corrosive gas – silicon tetrafluoride (SiF4).

Section 8 – Exposure Controls/Personal Protection

8.1 Component Exposure Limits

Follow workplace regulatory exposure limits for all types of airborne dust (e.g. total dust, respirable dust, respirable quartz, respirable cristobalite).

Component	OSHA & MSHA PEL	ACGIH TLV	NIOSH REL	
	TWA	TWA	TWA	Units
Crystalline Silica (quartz) (CAS 14808-60-7)	[10/(% SiO ₂ + 2)] (respirable) [30/(% SiO ₂ + 2)] (total)	0.025 (respirable)	0.05	mg/m ³
Particulate Not Otherwise Regulated	5 (respirable) 10 (total)	3 (respirable) 10 (total)	Not Established	mg/m ³

No LD₅₀ or LC₅₀ has been identified for this product.

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.

8.1.1 Abbreviations

- ACGIH: American Conference of Governmental Industrial Hygienists
- PEL: Permissible Exposure Limit
- MSHA: Mine Safety and Health Administration
- NIOSH: National Institute for Occupational Safety and Health
- OSHA: Occupational Safety and Health Administration
- TLV: Threshold Limit Value
- TWA: 8-Hour Time Weighted Average

8.2 Appropriate Engineering Controls

Use process enclosures or use sufficient local exhaust or general dilution ventilation to reduce the level of respirable crystalline silica below the exposure limit(s) outlined in Section 8.1. See ACGIH "Industrial Ventilation, A Manual of Recommended Practice" (latest edition).

8.3 Individual Protection Measures

8.3.1 Personal Protective Equipment – Respiratory

If it is not possible to reduce airborne exposure levels to below the OSHA PEL with ventilation, use the table below to assist you in selecting respirators that will reduce personal exposures to below the OSHA PEL. This table is part of the NIOSH Respirator Selection Logic, 2004, Chapter III, Table 1, "Particulate Respirators" and can be found at www.cdc.gov/niosh/npptl/topics/respirators; the user of this MSDS is directed to that site for information concerning respirator selection and use.

The assigned protection factor (APF) is the minimum anticipated level of protection provided by each type of respirator worn in accordance with an adequate respiratory protection program. For example, an APF of 10 means that the respirator should reduce the airborne concentration of a particulate by a factor of 10, so that if the workplace concentration of a particulate was 150 ug/m³, then a respirator with an APF of 10 should reduce the concentration of particulate to 15 ug/m³.

Assigned Protection Factor ¹	Type of Respirator (Use only NIOSH-certified respirators)
10	Any air-purifying elastomeric half-mask respirator equipped with appropriate type of particulate filter. ² Appropriate filtering facepiece respirator. ^{2,3} Any air-purifying full facepiece respirator equipped with appropriate type of particulate filter. ² Any negative pressure (demand) supplied-air respirator equipped with a half-mask.
25	Any powered air-purifying respirator equipped with a hood or helmet and a high efficiency (HEPA) filter. Any continuous flow supplied-air respirator equipped with a hood or helmet.
50	Any air-purifying full facepiece respirator equipped with N-100, R-100, or P-100 filter(s). Any powered air-purifying respirator equipped with a tight-fitting facepiece (half or full facepiece) and a high-efficiency filter. Any negative pressure (demand) supplied-air respirator equipped with a full facepiece. Any continuous flow supplied-air respirator equipped with a tight-fitting facepiece (half or full facepiece). Any negative pressure (demand) self-contained respirator equipped with a full facepiece.
1,000	Any pressure-demand supplied-air respirator equipped with a half-mask.
1. The protection offered by a given respirator is contingent upon (1) the respirator user adhering to complete program requirements (such as the ones required by OSHA in 29CFR1910.134), (2) the use of NIOSH-certified respirators in their approved configuration, and (3) individual fit testing to rule out those respirators that cannot achieve a good fit on individual workers.	

2. Appropriate means that the filter medium will provide protection against the particulate in question.
3. An APF of 10 can only be achieved if the respirator is qualitatively or quantitatively fit tested on individual workers.

When using respirator cartridges, consideration must be given to selection of the correct cartridge for the chemical exposure and the maximum use concentration for the cartridge. In addition, a cartridge change-out schedule must be developed based on the concentrations in the workplace.

Do not alter the respirator. Do not wear a tight-fitting respirator with facial hair such as a beard or mustache that prevents a good face to face piece seal between the respirator and face. Maintain, clean and fit test respirators in accordance with applicable standards.

8.3.2 Personal Protective Equipment – Eyes

Wear eye protection (ANSI approved safety glasses with side shields or chemical goggles).

8.3.3 Personal Protective Equipment – Skin

Wear protective gloves (such as latex or neoprene) and protective clothing to minimize skin contact. Substance may have drying effect on skin. Wash skin thoroughly after handling. Protection is recommended for workers suffering from dermatitis or sensitive skin.

Section 9 – Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Physical State:	White or tan sand, granular solid.	Vapor Pressure:	Not Applicable
Odor:	None	Vapor Density:	Not Applicable
Odor Threshold:	Not Applicable	Relative Density:	2.65 g/cc
pH:	6 - 8	Solubility:	Silica will dissolve in hydrofluoric acid and produce a corrosive gas, silicon tetrafluoride (SiO4)
Melting Point:	3110°F/1710°C	Water Solubility:	Insoluble
Freezing Point:	Not Applicable	Partition Coefficient:	Not Applicable
Boiling Point:	4046°F/2230°C	Auto-ignition Temperature:	Not Applicable
Flashpoint:	Not Applicable	Molecular Weight:	60.08
Evaporation Rate:	Not Applicable	Decomposition Temperature:	Not Applicable
Flammability:	Not Applicable	Viscosity:	Not Applicable
Explosive limits:	Not Applicable		
Oxidizing properties:	Contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride and oxygen difluoride may cause fires.		

Section 10 – Stability and Reactivity

10.1 Reactivity

Inert, not reactive under normal conditions of use.

10.2 Chemical Stability

Stable.

10.3 Possibility of Hazardous Reactions

Contact with powerful oxidizing agents, such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride and oxygen difluoride, may cause fires.

10.4 Conditions to Avoid

Not relevant.

10.5 Incompatible Materials

Powerful oxidizing agents, such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride and oxygen difluoride and hydrofluoric acid.

10.6 Hazardous Decomposition Products

Silica will dissolve in hydrofluoric acid and produce a corrosive gas – silicon tetrafluoride (SiF₄).

Section 11 – Toxicological Information

11.1 Likely Routes of Exposure

Inhalation is the most likely route of exposure to crystalline silica that can lead to adverse health effects and cause respiratory tract irritation.

11.2 Symptoms

Generally, there are no signs or symptoms of exposure to crystalline silica (quartz), but symptoms of exposure may include cough, sore throat, nasal congestion, sneezing, wheezing and shortness of breath.

11.3 Delayed and Immediate Effects and Also Chronic Effects from Short- and Long-Term Exposure

- **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 (often referred to as Simple 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 and 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 cough, sore throat, nasal congestion, sneezing, wheezing and shortness of breath. Complicated Silicosis or PMF may be associated with decreased lung function and may be disabling. Advanced Complicated Silicosis or PMF may lead to death and may result in heart disease secondary to the lung disease (cor pulmonale).

Accelerated Silicosis can occur with prolonged repeated inhalation of high concentrations of respirable crystalline silica over a relatively short period; the lung lesions can appear within five (5) years of initial exposure. Progression can be rapid. Accelerated Silicosis is similar to Chronic or Ordinary Silicosis, except that lung lesions appear earlier and 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 may lead to death.

- **AUTOIMMUNE DISEASES**

Several studies have reported excess cases of several autoimmune disorders – scleroderma, systemic lupus erythematosus, rheumatoid arthritis – among silica exposed workers. For a review of the subject, the following may be consulted: "Occupational Exposure to Crystalline Silica and Autoimmune Disease", Environmental Health Perspectives, Volume 107, Supplement 5, pp. 793-802 (1999); "Occupational Scleroderma", Current Opinion in Rheumatology, Volume 11, pp. 490-494 (1999).

- **TUBERCULOSIS**

Individuals with silicosis are at increased risk to develop pulmonary 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); "Risk of pulmonary tuberculosis relative to silicosis and exposure to silica dust in South African gold miners," Occup Environ Med., Volume 55, pp.496-502 (1998).

- **KIDNEY DISEASE**

Several studies have reported excess cases of kidney diseases, including end stage renal disease, among silica-exposed workers. For additional information on the subject, the following may be consulted: "Kidney Disease and Silicosis", Nephron, Volume 85, pp. 14-19 (2000).

- **NON-MALIGNANT RESPIRATORY DISEASES**

The reader is referred to Section 3.5 of the NIOSH Special Hazard Review cited below, for information concerning the association between exposure to crystalline silica and chronic bronchitis, emphysema and small airways disease. There are studies that disclose an association between dusts found in various mining occupations and non-malignant respiratory diseases, particularly among smokers. It is unclear whether the observed associations exist only with underlying silicosis, only among smokers, or result from exposure to mineral dusts generally (independent of the presence or absence of crystalline silica, or the level of crystalline silica in the dust).

11.3.1 Sources of Information

The NIOSH Hazard Review – Occupational Effects of Occupational Exposure to Respirable Crystalline Silica published in April 2002 summarizes and discusses the medical and epidemiological literature on the health risks and diseases associated with occupational exposures to respirable crystalline silica. The NIOSH Hazard Review should be consulted for additional information, and citations to published studies on health risks and diseases associated with occupational exposure to respirable crystalline silica. The NIOSH Hazard Review is available from NIOSH – Publications Dissemination, 4676 Columbia Parkway, Cincinnati, OH 45226, or see www.cdc.gov/niosh/topics/silica, then click on the link “NIOSH Hazard Review: Health Effects of Occupational Exposure to Respirable Crystalline Silica”.

The Occupational Safety and Health Administration (OSHA) provides information about crystalline silica and its potential health effects, see <https://www.osha.gov/dsg/topics/silicacrystalline/>. In addition, OSHA published a summary of respirable crystalline silica health effects regarding occupational exposure to respirable crystalline silica, see www.federalregister.gov/articles/2013/09/12/2013-20997/occupational-exposure-to-respirablecrystalline-silica.

11.4 Numerical Measures of Toxicity

Acute toxicity estimates are not available.

11.5 Carcinogenicity

NTP: Known to be a human carcinogen.

OSHA: Not listed.

IARC: Carcinogenic to humans (Group 1).

NTP – The National Toxicology Program classifies “Silica, Crystalline (respirable size)” as Known to be a human carcinogen.

IARC – The International Agency for Research on Cancer ("IARC") concluded that “crystalline silica in the form of quartz or cristobalite dust is carcinogenic to humans (Group 1)”, see <http://monographs.iarc.fr/ENG/Monographs/vol100C/index.php>.

Section 12 – Ecological Information



- 12.1 Ecotoxicity**
Not relevant.
- 12.2 Persistence and Degradability**
Not relevant.
- 12.3 Bioaccumulative Potential**
Not relevant. Some organisms accumulate Si(OH)₄.
- 12.4 Mobility in Soil**
Negligible.
- 12.5 Other Adverse Effects**
No specific adverse effects are known.

Section 13 – Disposal Considerations

- 13.1 Waste Disposal Method**
Dispose of contents/container in accordance with local/state/national regulations.

If this material has been used or otherwise contaminated, it is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Section 14 – Transport Information

- 14.1 Shipping Name**

ADR/RID/IMO/ICAO /US DOT

Proper Shipping Name Not Regulated

Hazard Class Not Regulated

ID Number Not Regulated

Packaging Group Not Regulated

Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code): Not Regulated

Crystalline silica (quartz) is not a hazardous material for purposes of transportation under the U.S. Department of Transportation Table of Hazardous Materials, 49 CFR §172.101.

Section 15 – Regulatory Information



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 §261 et seq.

CERCLA: Crystalline silica (quartz) is not classified as a hazardous substance under regulations of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), 40 CFR §302.

SARA, Title III, Sections 302/303 (40 CFR Part 355-Emergency Planning Notification): 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.

SARA, Title III, Sections 311/312 (40 CFR Part 3570-Hazardous Chemical Reporting: Community Right-To-Know): Acute: Yes, Chronic: Yes, Fire: No, Pressure: No, Reactivity: No

SARA, Title III, Sections 313 (40 CFR Part 372-Toxic Chemical Release Reporting: Community Right-To-Know): Not a RCRA Hazardous Waste.

Clean Air Act: Crystalline silica (quartz) mined and processed by Premier Silica is 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 §175.300(b)(3)(xxvi).

California Proposition 65: Crystalline silica (airborne particles of respirable size) is known to the State of California to cause cancer.

California Inhalation Reference Exposure Level (REL): California established a chronic REL of 3 µg for silica (crystalline, respirable). A chronic REL is an airborne level of a substance at or below which no adverse health effects are anticipated in individuals indefinitely exposed to the substance at that level.

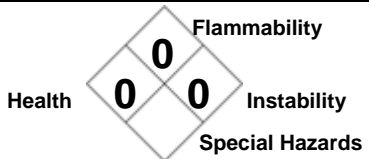
Massachusetts Toxic Use Reduction Act: Silica, crystalline (respirable size, <10 microns) is "toxic" for purposes of the Massachusetts Toxic Use Reduction Act.

Pennsylvania Worker and Community Right to Know Act: Quartz is a hazardous substance under the Act, but it is not a special hazardous substance or an environmental hazardous substance.

Texas Commission on Environmental Quality: The Texas CEQ has established chronic and acute Reference Values and short term and long term Effects Screening Levels for crystalline silica (quartz), see www.tceq.texas.gov.

Canadian Domestic Substances List: Premier Silica products, as naturally occurring substances, are on the Canadian DSL.

WHMIS Classification: D2A

Hazardous Material Information System	Health	*	0	National Fire Protection Association	
	Flammability		0		
	Physical Hazard		0		
	Personal Protection		B		
HMIS Personal Protection: B (Safety glasses and gloves) HMIS Chronic Effects: * (For additional information, see Sections 2, 8 and 11)					

Section 16 – Other Information

16.1 Date of Last Revision

June 1, 2015

16.2 Last Change

Updates related to OSHA HAZCOM.

16.3 Disclaimer

Premier Silica believes the information contained herein is accurate. However, Premier Silica makes no guarantees to such accuracy and assumes no liability in connection with the use of the information contained herein which is not intended to be and should not be construed as legal advice or as insuring compliance with any federal, state or local laws or regulations. Any party using this product should review all such laws, rules or regulations prior to use, including but not limited to U.S. Federal and State regulations.

No warranty is made, express or implied, of merchantability, fitness for a particular purpose or otherwise.

SDS are available at www.premiersilica.com