



SAFETY DATA SHEET

Product Name: Silica Sand, Silica Flour, or Quartz

Product Description: Crystalline Silica

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE, AND OF THE COMPANY/UNDERTAKING

1.1 Identification of the substance or preparation

Product identifiers: Silica Sand, Quartz, Novaculite, Silicon Dioxide, Silica Flour.

1.2 Other means of identification

Odorless, abrasive (hard), white, gray, or tan granular powder.

1.3 Recommended use and restrictions on use

Main applications of silica (non-exhaustive list): glass Ingredient, silica chemical processing, foundry sand, refractory ingredient, filler for resins, composites, artificial stone, textured coatings, glues and mortars.

DO NOT USE THIS PRODUCT FOR SANDBLASTING.

2. HAZARDS IDENTIFICATION

2.1 Classification in accordance with 29 CFR §1910.1200(d)

STOT RE 1; Carcinogen 1A

2.2 Signal word, hazard statements, symbol and precautionary statements

Danger Causes damage to lungs, kidneys, through prolonged or repeated exposure. May cause cancer by prolonged or repeated inhalation.



Do not breathe dust. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Obtain special instructions before use. Do not handle until all safety instructions have been read and understood. Wear eye and respiratory protection. If exposed or concerned: Get medical attention. Store locked up. Dispose of contents in accordance with local, regional and national regulations.

2.3 Hazards not otherwise classified

Increased risk of systemic autoimmune disease (scleroderma, rheumatoid arthritis, and systemic lupus erythematosus) through prolonged or repeated inhalation. Increased risk of tuberculosis through prolonged or repeated inhalation. Smoking increases the risk of lung function impairment and chronic obstructive pulmonary disease COPD through prolonged or repeated inhalation.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Chemical name and composition

Component	CAS Number	EINECS Number	Percent
Silicon dioxide (quartz)	14808-60-7	238-878-4	98.7 - 99.9
Aluminum Oxide	1344-28-1	215-691-6	<1.1
Iron Oxide	1309-37-1	215-168-2	<0.1
Titanium Oxide	13463-67-7	236-675-5	<0.1



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3.2 Common name and synonyms

Silica, SiO₂, quartz, crystalline silica, Novaculite, cryptocrystalline quartz, microcrystalline quartz, sand, chert, flint, tripoli.

3.3 Impurities which are themselves classified and which contribute to the classification of the product

Contains 1% or greater respirable crystalline silica which is classified as STOT RE 1

4. FIRST AID MEASURES

4.1 Eye Exposure

Not classified as an eye irritant. May cause physical abrasion if it gets in eyes. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

4.2 Skin Exposure

Not applicable.

4.3 Inhalation

If exposed or concerned: Get medical attention.

4.4 Ingestion

Not applicable.

4.5 Most important symptoms/effects, acute and delayed

Dry chronic cough, sputum production, shortness of breath, wheezing, and reduced pulmonary function.

4.6 Indication of immediate medical attention and special treatment needed.

Symptoms of pulmonary impairment, such as shortness of breath, coughing, and wheezing.

5. FIRE-FIGHTING MEASURES

5.1 Suitable extinguishing media

Noncombustible and compatible with all extinguishing media.

5.2 Specific hazards arising from the chemical

Noncombustible. Thermal decomposition will not occur.

5.3 Special protective equipment and precautions for fire-fighters

Wear respiratory protection where airborne dust occurs.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment, and emergency procedures

Avoid generating airborne dust. Wear respiratory protection where airborne dust occurs. Keep unnecessary people away; isolate hazard area and deny entry.

6.2 Methods and materials for containment and cleaning up.

Do not dry sweep or use compressed air. Use water spraying, or a ventilated or HEPA filtered vacuum cleaning system.

7. HANDLING AND STORAGE

7.1 Precautions for safe Handling

Do not breathe dust. Obtain special instructions before use. Do not handle until all safety instructions have been read and understood. Wear eye and respiratory protection. Avoid airborne dust generation.



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Use appropriate exhaust ventilation at places where airborne dust is generated, including during loading and unloading. Do not rely on your sight to determine if dust is in the air. Respirable crystalline silica dust may be invisible in the air. Handle packaged products carefully to prevent accidental bursting. Maintain and test ventilation and dust collection equipment. Use all available work practices to control dust exposures, such as water sprays. Practice good housekeeping. Do not permit dust to collect on walls, floors, sills, ledges, machinery, or equipment. Exposures to respirable crystalline silica can occur when cutting, sawing, grinding, drilling, and crushing this material or articles that contain this material.

7.2 Conditions for safe storage

Keep containers closed and store to avoid accidental tearing, breaking, or bursting. Inert and unreactive with most chemicals. Contact with powerful oxidizing agents such as fluorine, chlorine trifluoride, and oxygen difluoride may cause fires.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Exposure limits

OSHA PEL 8-hour time weighted average for respirable quartz expressed as millions of particles per cubic foot of air, based on impinger samples counted by light-field techniques:

2 5 0

(%SiO₂-i-5)

The percentage of crystalline silica in the formula is the amount determined from airborne samples, except in those instances in which other methods have been shown to be applicable. OSHA PEL 8-hour time weighted average for respirable quartz expressed as milligrams per cubic meter:

10 mg/m³

(%SiO₂-i-2)

Both concentration and percent quartz for the application of this limit are to be determined from the fraction passing a size-selector with the following characteristics:

Aerodynamic diameter (unit density sphere)	Percent passing selector
2	90
2.5	75
3.5	50
5	25
10	0

OSHA PEL 8-hour time weighted average for Quartz total dust expressed as milligrams per cubic meter 30 mg/m³

(%SiO₂-i-2)

On September 12, 2013, OSHA published a preliminary quantitative risk assessment concluding that the available evidence indicates that employees exposed to respirable crystalline silica well below the current PELs are at increased risk of lung cancer mortality and silicosis.

CAL OSHA PEL 8-hour time weighted average for respirable quartz 0.1 mg/m³

CAL OSHA PEL 8-hour time weighted average for quartz total dust 0.3 mg/m³

ACGIH TLV 8-hour time weighted average for respirable α-quartz and cristobalite 0.025 mg/m³

NIOSH REL up to 10 -hour time weighted average for respirable quartz ca 0.05 mg/m³



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8.2 Appropriate engineering controls

Avoid airborne dust generation. Use process enclosures and appropriate exhaust ventilation at places where airborne dust is generated, including during loading and unloading. Apply organizational measures, e.g. by isolating personnel from dusty areas. Remove and wash soiled clothing.

8.3 Individual protection measures, such as personal protective equipment

8.3.1 Eye / Face Protection

Wear appropriate safety glasses with side shields or chemical goggles.

8.3.2 Skin Protection

Wear body-covering clothing. Appropriate hand protection (e.g. gloves, barrier cream) is recommended for workers who suffer from dermatitis or sensitive skin. Wash hands at the end of each work session. Remove and wash soiled clothing.

8.3.3 Respiratory Protection

When engineering and work practice controls are not feasible, while they are being implemented, or when they do not reduce silica levels below OSHA PELs, employers must provide workers with respirators. Whenever respirators are used, the employer must have a respiratory protection program that meets the requirements of OSHA's Respiratory Protection standard (29 CFR 1910.134). This program must include proper respirator selection, fit testing, medical evaluations, and training. See, OSHA's Respiratory Protection eTool, available at www.osha.gov/SLTC/etools/respiratory/index.html

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	White, gray, or tan granular powder
Odor	Odorless
Odor Threshold	Not applicable
pH:	Water dispersions are neutral; pH 6 - 8
Specific Gravity:	2.65 g/cc
Melting Point:	3110°F/1710°C
Freezing Point:	Not applicable
Boiling Point:	4046°F/2230°C
Flashpoint:	Not applicable
Flammability:	Noncombustible
Flammable or Explosive	
Limits:	Not applicable
Vapor Pressure:	Not detectable
Vapor density:	Not applicable
Relative Density:	Not applicable
Solubility:	Dissolves in hydrofluoric acid and produces a corrosive gas, silicon tetrafluoride
Water Solubility:	Negligible
Partition Coefficient	
n-octanol/water:	Not applicable
Autoignition Temperature:	Not applicable
Decomposition Temperature:	Will not decompose
Viscosity:	Not applicable



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10. STABILITY AND REACTIVITY

10.1 Reactivity

Stable and inert.

10.2 Chemical Stability

Will not decompose or react with containers or environmental materials

10.3 Possibility of hazardous reactions

Reacts only with powerful oxidizing agents such as fluorine, chlorine trifluoride, and oxygen difluoride which may cause fires. If crystalline silica (quartz) is heated to more than 870°C, it can change to tridymite crystalline silica; and if crystalline silica (quartz) is heated to more than 1470°C, it can change to cristobalite crystalline. The OSHA PEL for respirable tridymite and cristobalite is one-half of the OSHA PEL for crystalline silica (quartz).

10.4 Conditions to avoid

None.

10.5 Incompatible materials

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

10.6 Hazardous Decomposition Products

None. Will not decompose.

11. TOXICOLOGICAL INFORMATION

11.1 Likely routes of exposure

The relevant route for occupational exposure is by inhalation.

11.2 Symptoms related to the physical, chemical and toxicological characteristics

Dry chronic cough, sputum production, shortness of breath, wheezing, and reduced pulmonary function.

11.3 Delayed and immediate effects and also chronic effects from short- and long-term exposure

11.3.1 Short-term exposure

Acute silicosis can occur within a few weeks to months after inhalation exposure to extremely high levels of respirable crystalline silica. Acute silicosis causes decreased lung function and can result in heart disease secondary to the lung disease: heart failure and cor pulmonale. Death from acute silicosis can occur within months to a few years of disease onset, and persons with acute silicosis are at high risk of contracting other lung diseases including tuberculosis, atypical mycobacterial infections, and fungal superinfections. Quantitative information on the level of exposure that causes acute silicosis is not available, but available information indicates those levels are far in excess of permissible exposure limits. Animal studies also suggest that pulmonary reactions of rats to short-duration exposure to freshly fractured silica mimic those seen in acute silicosis in humans.

Accelerated silicosis results from exposure to high levels of airborne respirable crystalline silica, and usually occurs within 2 to 10 years of initial exposure. Accelerated silicosis causes decreased lung function and can result in heart disease secondary to the lung disease. Accelerated silicosis has a rapid, severe course and persons with this condition are at high risk of contracting other lung diseases including tuberculosis, atypical mycobacterial infections, fungal superinfections, and lung cancer. Quantitative information on the level of exposure that causes accelerated silicosis is not available, but available information indicates those levels are substantially in excess of permissible exposure limits.



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11.3.2 Long term exposure

Chronic silicosis generally occurs after 10 years or more of inhalation exposure to respirable crystalline silica at levels below those associated with acute and accelerated silicosis. Chronic silicosis in most cases is a slowly progressive disease resulting in decreased lung function and can result in heart disease secondary to the lung disease. Its effects are disabling and may lead to death. Persons with chronic silicosis are at high risk of contracting other lung diseases including tuberculosis, atypical mycobacterial infections, fungal superinfections, and lung cancer. On September 12, 2013, OSHA published a preliminary quantitative risk assessment concluding that the available evidence indicates that employees exposed to respirable crystalline silica well below the current PELs are at increased risk of lung cancer mortality and silicosis.

Chronic obstructive pulmonary disease, COPD, including chronic bronchitis and emphysema, occurs in silica-exposed workers, including those who do not develop silicosis. Respirable crystalline silica exposure and smoking may be synergistic for COPD, that is, there is evidence that the combined effect of exposure to respirable crystalline silica and smoking may be greater than additive.

Respirable crystalline silica is recognized by OSHA, NTP and IARC as a cause of lung cancer. Respirable crystalline silica is an independent risk factor from smoking for lung cancer. Respirable crystalline silica exposure and smoking may be synergistic for lung cancer, that is, there is some evidence that the combined effect of exposure to respirable crystalline silica and smoking may be greater than additive.

There is substantial evidence suggesting an association between exposure to inhaled respirable crystalline silica and increased risks of renal (kidney) and systemic autoimmune disease (scleroderma, rheumatoid arthritis, and systemic lupus erythematosus).

11.4 Numerical measures of toxicity (such as acute toxicity estimates)

Crystalline silica is not acutely toxic. Reliable numerical measures of chronic toxicity do not exist.

12. ECOLOGICAL INFORMATION

12.1 Ecotoxicity (aquatic and terrestrial, where available)

Crystalline silica (quartz) is ubiquitous in the natural environment. It is not ecotoxic; i.e., no data exists that demonstrate or suggests that crystalline silica (quartz) is toxic to animals, microorganisms, or plants.

12.2 Persistence and degradability

Because of its low solubility and slow rate of solution, crystalline silica (quartz) is persistent except on a geologic time-scale.

12.3 Bioaccumulative potential

Does not bioaccumulate. Some plants, such as graminaceae (grasses) and animals such as Demospongiae (siliceous sponges) bioaccumulate silica, but this occurs by absorption of dissolved silica from natural waters.

12.4 Mobility in soil

Immobile in soil.

12.5 Other adverse effects

None.



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13. DISPOSAL CONSIDERATIONS

13.1 Waste Disposal Method

Disposed material is not a hazardous waste. Where possible, recycling is preferable to disposal. Dispose in accordance with local, regional and national regulations.

13.2 Container Handling and Disposal

Avoid airborne dust generation from residues in packaging, and use suitable engineering controls and personal protection measures. Store used packaging in enclosed receptacles. Dispose of containers, residues and unused contents accordance with local, regional and national regulations

14. TRANSPORTATION INFORMATION

14.1 UN number

None. Not a regulated material for transportation purposes.

14.2 UN proper shipping name

None. Not a regulated material for transportation purposes.

14.3 Transport hazard class(es)

None. Not a regulated material for transportation purposes.

14.4 Packing group, if applicable

Not applicable.

14.5 Environmental hazards

None.

14.6 Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code)

Not applicable.

14.7 Special precautions

Do not breathe dust. Wash thoroughly after handling.. Do not eat, drink or smoke when using this product. Avoid generating airborne dust during loading and unloading. Use suitable engineering controls and personal protection measures. Handle packaged products carefully to prevent accidental bursting.

15. REGULATORY INFORMATION

15.1 Toxic Substances Control Act (TSCA) status

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

15.2 Resource Conservation and Recovery Act (RCRA) status

Disposed product is not a hazardous waste under RCRA.

15.3 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) status

No CERCLA Reportable Quantity has been established for any ingredient in this product.

15.4 Emergency Planning and Community Right to Know Act (SARA Title III) status

Not an Extremely Hazardous Substance under §302. Not a Toxic Chemical under §313. Hazard Categories under §§311/312: Acute.

15.5 Clean Air Act status

This product is not processed with nor does it contain any Class I or Class II ozone depleting substances.



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15.6 California Proposition 65 status

Crystalline silica (airborne particles of respirable size) is classified as a substance known to the State of California to be a carcinogen.

15.7 Massachusetts Toxic Use Reduction Act status

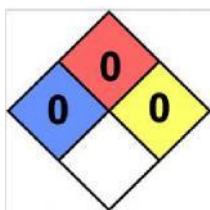
Silica, crystalline (respirable size, <10 microns) is "toxic" for purposes of the Massachusetts Toxic Use Reduction Act.

15.8 Pennsylvania Worker and Community Right to Know Act status

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

16. OTHER INFORMATION

16.1 NFPA 704: Standard System for the Identification of the Hazards of Materials for Emergency Response (Fire Diamond)



THE INFORMATION ON THIS SAFETY DATA SHEET IS BELIEVED TO BE ACCURATE AND IT IS THE BEST INFORMATION AVAILABLE TO AGSCO CORPORATION. THIS DOCUMENT IS INTENDED ONLY AS A GUIDE TO THE APPROPRIATE PRECAUTIONS FOR HANDLING A HAZARDOUS SUBSTANCE BY PERSON TRAINED IN HAZARDOUS SUBSTANCE HANDLING. AGSCO CORPORATION MAKES NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO SUCH INFORMATION OR THE PRODUCT TO WHICH IT RELATES, AND WE ASSUME NO LIABILITY RESULTING FROM THE USE OR HANDLING OF THE PRODUCT TO WHICH THIS SAFETY DATA SHEET RELATES. USERS AND HANDLERS OF THIS PRODUCT SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION PROVIDED HEREIN FOR THEIR OWN PURPOSES.