

# MATERIAL SAFETY DATA SHEET

## SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** Silica Sand sold under various names: Glass Sand, Sand

**SYNONYMS:** Sand, Silica Sand, Quartz, Crystalline, Foundry Sand, Engine Sand, Frac Sand, Filtration Sand, Bunker Sand, Turf Sand, Glass Sand

**MANUFACTURER:** Ohio Basic Minerals LLC  
15317 Beaver Pike  
Jackson, Ohio 43650  
Telephone: (740) 286 – 0258

**EMERGENCY TELEPHONE:** CHEMTREC (800) 424-9300

**Warning Never Use This Material for Sand Blasting**

## SECTION 2 - HAZARDS IDENTIFICATION

### Emergency Overview:

A white or tan sand. It is not flammable, combustible or explosive. Do not breathe this material. Crystalline silica (Quartz) is not known to be an environmental hazard. Crystalline Silica (Quartz) is incompatible with hydrofluoric acid, fluorine, chlorine trifluoride or oxygen difluoride.

### POTENTIAL HEALTH EFFECTS:

**EYE:** Contact can cause moderate to severe irritation of eyes, including discomfort or pain, local redness and swelling of the conjunctiva.

**SKIN:** Contact can cause dryness or moderate irritation of skin.

**INGESTION:** None known

**INHALATION:** If inhaled as dust, this product can cause irritation of the respiratory system resulting in coughing and/or sneezing. Higher exposures may cause a build-up of fluid in the lungs with severe shortness of breath. Inhalation of silica can also cause a chronic irreversible lung disorder, silicosis. Some medical reports state inhalation of silica dust may cause lung cancer.

Per the ACGIH, adverse effects are not likely to occur in the workplace provided exposure levels do not exceed the appropriate TLVs/PELs. See Section 8. However, because of the wide variation in individual susceptibility, lower exposure limits may be appropriate for some individuals including persons with pre-existing medical conditions.

**CHRONIC EFFECTS / CARCINOGENICITY:**

Silicosis, cancer, scleroderma, tuberculosis, nephrotoxicity and arthritis and potential chronic effects. See Section 11 for further information regarding these conditions

**SIGNS AND SYMTOMS OF EXPOSURE:**

There are generally no signs or symptoms of exposure to crystalline silica (Quartz). Often, chronic silicosis has no symptoms. The symptoms of chronic silicosis, if present, are shortness of breath, wheezing, cough and sputum production. The symptoms of acute silicosis are the same; additionally, weight loss and fever are associated with acute silicosis. The symptoms of scleroderma include thickening and stiffness of the skin, particularly in the fingers, shortness of breath, difficulty swallowing and joint problems.

**MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:**

The condition of individuals with lung disease (e.g., bronchitis, emphysema, chronic obstructive pulmonary disease) can be aggravated by exposure. See Section 11 for additional detail on potential adverse health effects.

**POTENTIAL ENVIORNMENTAL EFFECTS:**

None known

<b>SECTION 3 - COMPOSITION / INFORMATION ON INGREDIENTS</b>		
<b>Hazardous Ingredients</b>	<b>CAS Registry No.</b>	<b>Percentage (wt/wt)</b>
Crystalline silica (Quartz)	14808-60-7	90.0 - 99.9
OSHA Regulatory Status: The material is classified as hazardous under OSHA regulations.		

<b>SECTION 4 - FIRST AID MEASURES</b>	
<b>Eye:</b>	Quickly and gently blot or brush away sand. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 15 minutes or until the sand is removed, while holding the eyelid(s) open. Occasionally lift eyelid(s) to ensure thorough rinsing. Beyond flushing, do not attempt to remove material from eye(s). Do not rub eyes. Seek medical attention immediately.
<b>Skin:</b>	Wash with soap and water. Seek medical attention if irritation persists.
<b>Ingestion:</b>	Never give anything by mouth if the victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. If irritation or discomfort occurs, obtain medical advice immediately.
<b>Inhalation:</b>	Remove source of contamination or move victim to fresh air. Seek medical attention if necessary. If breathing has stopped, give artificial respiration.

**SECTION 5 -****FIRE FIGHT MEASURES****FLAMABLE PROPERTIES:**

Flash Point: Not flammable

Method: N/A

**EXTINGUISHING MEDIA:**

None required. Use suitable extinguishing media for surrounding fire.

Fire and Explosion Hazards: None

Fire Fighting Instructions : None

**SECTION 6 -****ACCIDENTAL RELEASE MEASURES****SPILL / LEAK PROCEDURES:**

Use dustless methods (vacuum) and place in closable container for disposal or flush with water. Do not dry sweep, or flush with water. Use proper protective equipment indicated in section 8.

**SECTION 7 -****HANDLING AND STORAGE****HANDLING:**

Keep in tightly closed containers. Protect containers from physical damage. Avoid direct skin contact with the material.

Silica sand material contains fine dust. If you breathe this dust you can suffer severe, irreversible lung damage and death. Some medical reports state inhalation of silica dust may cause lung cancer. Medical reports also link breathing silica dust to crippling arthritis and skin and eye irritation. See Section 11 for further information.

You must never use this material without having government-approved respirator. The work area must also be thoroughly ventilated by the use of forced air ventilation during and after use of this material.

If dusty, use protective goggles. An eye wash station should be readily available where this product is used.

Prior to use handling, you are advised to review and thoroughly understand all health precautions outlined in the Material Safety Data Sheet (MSDS).

**STORAGE:**

Store in cool, dry, and well ventilated location. Do not store near incompatible materials. (See Section 10 for the list of incompatible materials.) Avoid breakage of bagged materials or spills of bulk materials.

**ENGINEERING CONTROLS:**

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

**RESPIRATORY PROTECTION:**

Use NIOSH/MSHA approved respirators if airborne concentration exceeds PEL. It is a violation of federal safety laws (OSHA) for employers to require the use this material without full respiratory protection. The federal laws that apply are: 29CFR 1910.134; 29CFR 1910.100; 29CFR1910.94

The following chart specifies the types of respirators that may provide respiratory protection for crystalline silica.

**Particulate concentration    MINIMUM RESPIRATORY PROTECTION\***

10 x PEL or less	Any particulate respirator, except single- use or quarter-mask respirator. Any fume or high efficiency particulate filter respirator any supplied-air respirator. Any self-contained breathing apparatus.
50 x PEL or less	A high efficiency particulate filter respirator with a full facepiece. Any supplied-air respirator with a full facepiece, helmet, or hood. Any self-contained apparatus with a full facepiece.
500 x PEL or less	A powered air-purifying respirator with high efficiency particulate filter. A type C supplied-air respirator operated in pressure-demand or other positive pressure or continuous-flow mode.
Greater than 500 x PEL or entry and escape from unknown concentrations	A type C, supplied-air respirator with a full facepiece, hood or helmet, operated in a positive pressure mode (see 29 CFR 1910.94 (a) (iii)). Also see 30 CFR part 11.

\*Use only NIOSH-approved or MSHA-approved equipment. See 29 CFR §1910.134 and 42 CFR §84. See also ANSI standard Z88.2 (latest revision) "American National Standard for Respiratory Protection"

**SKIN PROTECTION:**

Use appropriate gloves to prevent skin contact. Clothing should fully cover arms and legs and be tight fitted at the cuffs, neck and ankles to prevent dust from contacting the body. Clothing should be regularly washed to prevent dust accumulation.

**EYE PROTECTION:**

Use safety goggles

**EXPOSURE GUIDELINES:**

	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
Crystalline silica (respirable)	10 mg/m <sup>3</sup> ÷ (% silica in the dust plus 2)	0.025 mg/m <sup>3</sup>

Crystal 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 the crystalline silica as trydimite and cristobalite is one-half the PEL for the 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.

**SECTION 9- PHYSICAL AND CHEMICAL PROPERTIES**

<b>APPEARANCE:</b>	White or tan sand; granular, crushed, or ground
<b>ODOR:</b>	Odorless
<b>BOILING POINT:</b>	4046°F
<b>MELTING POINT:</b>	3110°F
<b>VAPOR PRESSURE:</b>	N/A
<b>SOLUBILITY IN WATER:</b>	Insoluble
<b>SPECIFIC GRAVITY:</b>	2.65
<b>Ph:</b>	N/A

**SECTION 10- STABILITY AND REACTIVITY**

<b>STABILITY:</b>	Chemically stable
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**MATERIALS TO AVOID:**

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

**CONDITIONS TO AVOID:**

None

**HAZARDOUS DECOMPOSITION PRODUCTS:**

Silica will dissolve in hydrofluoric acid and produce a corrosive gas silicon tetrafluoride.

**SECTION 11- TOXICOLOGICAL INFORMATION**

No LD50s or LC50s have been identified for this product

**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 or crystalline silica dust. It is further defined as either simple or complicated silicosis.

Simple silicosis is characterized by lung lesion (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 functions 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 function 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 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 the 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 exposure 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, and weight loss. Acute silicosis is fatal.

#### **CANCER:**

The International Agency for Research on Cancer (“IARC”) concluded that there was “sufficient evidence in humans for the carcinogenicity of crystalline silica in forms of quartz or cristobalite from occupational sources”, and that there is “*sufficient evidence*” in experimental animals for the carcinogenicity of quartz and cristobalite.” For further information on the IARC evaluation, see IARC Monographs on the Evaluation of Carcinogenic Risk to Humans. Volume 68

NTP – The National Toxicology Program, in its Sixth 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.

#### **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 exposure 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”, Parks, 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", Parks, W. Raymond (1994). "Further evidence of human silica nephrotoxicity in occupationally exposed workers" British Journal of Industrial Medicine. Vol. 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).

## ARTHRITIS:

There are recent studies suggesting that exposure to respirable crystalline silica or that the disease silicosis is associated with the increased incidence of arthritis. The following may be consulted for additional information on silica exposure and arthritis: American Journal of Industrial Medicine. Vol. 35, pp. 375-381 "Connective Tissue Disease and Silicosis", Roseman KD; Moore-Fuller M.; Reily MJ. (1999) Environmental Health Perspective, Volume 107, pp. 793-802 "Occupational Exposure to Crystalline silica and Autoimmune Disease", Parks CG; Conrad K; Cooper GS. (1999).

## SECTION 12 - ECOLOGICAL INFORMATION

### Ecotoxicity:

Crystalline silica (quartz) is not known to be ecotoxic; i.e. no data suggest that crystalline silica (quartz) is toxic to birds, fish, invertebrates, microorganisms or plants.

### Environmental Fate:

This material shows no bioaccumulation effect or food chain concentration toxicity.

## SECTION 13 - DISPOSAL CONSIDERATIONS

Dispose of in accordance with all applicable federal, state and local environmental regulations. The material may be landfilled; however, used material may contain materials derived from other sources that because of contamination may not be disposed of in landfills. Disposed material should be covered to minimize generation of airborne dust.

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

US DOT	Not regulated
Proper Shipping Name	NA
Class	NA
UN Number	NA
Packing Group	NA

**SECTION 15 -****REGULATORY INFORMATION**

United States:

**EPA**

RCRA Hazardous Waste Number: not listed (40 CFR 261.33)

RCRA Hazardous Waste Classification (40 CFR 261): not classified

CERCLA Hazardous Substance (40 CFR 302.4) unlisted specific per RCRA, Sec. 3001; CWA, Sec. 311 (b)(4); CWA, Sec. 307(a), CAA, Sec. 112

CERCLA Reportable Quantity (RQ): not listed

SARA 311/312 Codes: not listed

SARA Toxic Chemical (40 CFR 372.65): not listed

SARA EHS (Extremely Hazardous Substance) (40 CFR 355): Not listed, Threshold

Planning Quantity (TPQ): Not listed

TSCA All chemical ingredients are listed on the U.S. TSCA Inventory List.

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)(xxvi).

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

**OSHA/MSHA REGULATIONS:**

Air contaminant (29 CFR 1910.100, Table Z-1-A): 5 mg/m<sup>3</sup> TWA-8

MSHA: Not listed

OSHA Specifically Regulated Substance (29 CFR 1910): Not listed.

**SECTION 16 -****OTHER INFORMATION**

**HMIS:** Health Risk 0\*, Flammability 0, Reactivity 0, Personal Protection, E

**NFPA:** Health Hazard 0, Fine Hazard 0, Reactivity 0

To the best of our knowledge, the information contained herein is accurate. However, Ohio Basic Materials does not assume any liability whatsoever for the completeness of the information contained herein. Final determination of suitability of any materials is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.