

HOLLISTON SAND COMPANY, INC.

MSDS – MANUFACTURERS SAFETY DATA SHEET

MANUFACTURER IDENTIFICATION

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HAZARD IDENTIFICATION

- Common Identity: Silica Sand
- Crystalline silica: CAS # 14808-60-7
- Chemical Components: Silica, crystalline quartz
- Considered hazardous under the OSHA Hazard Communications Standard (29 CFR 1910.1200).
- Potential health risks / chronic effects include silicosis, lung cancer, tuberculosis, autoimmune and chronic kidney diseases, non-malignant respiratory diseases and abrasion of the cornea.
- Available references as related to exposure limits:
 - Code of Federal Regulations 29CFR1910.1000: "Air Contaminants," Occupational Safety and Health Administration (OSHA), Washington, DC, <http://www.osha.gov>.
 - Threshold Limit Values and Exposure Indices for Chemical Substances in Workroom Air," American Conference of Governmental Industrial Hygienists (ACGIH), Cincinnati, OH 1988, <http://www.acgih.org>.
 - National Technical Information Service, Springfield, VA: Criteria for Recommended Standard Occupational Exposure to Crystalline Silica, HEW Publication No. (NIOSH) 75-120, NTIS Acquisition No. PB 246-697, <http://www.ntis.gov>.

COMPOSITION / PHYSICAL DATA

- Specific Chemical Identity: Silicon Dioxide SiO₂
- Composition: SiO₂, Al₂O₃, CaO, FeO, MgO, TiO₂ and other trace elements
- Specific Gravity: 2.60
- Vapor Pressure (mm Hg.): none
- Solubility in Water: Insoluble
- Tan / Gray in appearance
- Vapor Pressure: none
- Odor: none
- Evaporation Rate (Butyl Acetate = 1): none
- Sub-rounded / Sub-angular shapes

STABILITY AND REACTIVITY

- Contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride may cause fire and/or explosion.
- Silica dissolves readily in hydrofluoric acid producing a corrosive gas – silicon tetrafluoride.
- Handling may generate silica-containing respirable dust particles.
- Hazardous Polymerization: Not known to polymerize
- Flashpoint: Not flammable
- Flammable Limits in Air: Not Flammable
- Extinguishing Agents: None required

FIRST AID MEASURES

- **INHALATION:** Routes of entry are typically by inhalation not by ingestion or through the skin. No specific first-aid is necessary since the adverse health effects associated with exposure to crystalline silica result from chronic exposures. If there is a gross inhalation of crystalline silica, remove the person immediately to fresh air, give artificial respiration as needed, and seek medical attention as needed.
- **EYE CONTACT:** Wash immediately with water. If irritation persists, seek medical attention.
- **SKIN CONTACT:** Not applicable
- **INGESTION:** Not applicable

HEALTH HAZARD INFORMATION - SILICOSIS

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

- **Chronic Silicosis:** is the most common form of silicosis and can occur after many years of exposure to relatively low levels of airborne respirable silica dust. It is further defined as simple or complicated silicosis.
- **Accelerated Silicosis** can occur with a exposure to high concentrations of respirable crystalline silica over a relatively short period; the lung lesions can appear within five years of exposure. Progression can be rapid. Accelerated silicosis is similar to chronic or ordinary silicosis, except the 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 is fatal.
- **Carcinogenicity:** Crystalline silica inhaled from occupational sources is classified as carcinogenic to humans.
- **Signs and Symptoms:** Shortness of breath, reduced pulmonary function, coughing, wheezing and possible chest illness.
- **References:**
 - IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Human-Silica and Some Silicates, Coal, Dust and Para-Aramid Fibrils, Vol. 68, 1997. World Health Organization, International Agency for Research on Cancer (IARC), Lyon, France, 1997, <http://www.iarc.fr>
 - NIOSH Hazard Review – Occupational Effects of Occupational Exposure to Respirable Crystalline Silica published in April 2002. NIOSH-Publications Dissemination, 800.356.4676, www.cdc.gov/niosh/topics/silica.
 - Sand or gravel is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA).
 - In October 1996, an IARC Working Group re-assessing crystalline silica, a component of this product, designated respirable crystalline silica as carcinogenic (Group 1). The NTP's [Report on Carcinogens, 9th edition](#), lists respirable crystalline silica as a "known human carcinogen."
 - In year 2000, the American Conference of Governmental Industrial Hygienists (ACGIH) listed respirable crystalline silica (quartz) as a suspected human carcinogen (A-2). These classifications are based on sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to crystalline silica.

PERSONAL PROTECTION AND EXPOSURE CONTROLS

Local Exhaust Ventilation: Use sufficient local exhaust ventilation to reduce the level of respirable crystalline silica to below OSHA PEL. See ACGIH "Industrial Ventilation, A Manual of Recommended Practice".

Respiratory Protection: If it is not possible to reduce the airborne exposure levels to below the OSHA PEL with ventilation, use the guidelines found in the NIOSH Respirator Selection Logic, 2004 Chapter III, Table 1, "Particulate Respirators". The full document 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.

Table 1. Particulate Respirators

Assigned protection ¹ factor	Type of Respirator
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).

	<p>Any powered air-purifying respirator equipped with a tight-fitting facepiece (half or full facepiece) and a high-efficiency filter.</p> <p>Any negative pressure (demand) supplied-air respirator equipped with a full facepiece.</p> <p>Any continuous flow supplied-air respirator equipped with a tight-fitting facepiece (half or full facepiece).</p> <p>Any negative pressure (demand) self-contained respirator equipped with a full facepiece.</p>
1,000	Any pressure-demand supplied-air respirator equipped with a half-mask.
2,000	Any pressure-demand supplied-air respirator equipped with a full facepiece.
10,000	Any pressure-demand self-contained respirator equipped with a full facepiece. Any pressure-demand supplied-air respirator equipped with a full facepiece in combination with an auxiliary pressure-demand self-contained breathing apparatus.
<p>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.</p> <p>2 Appropriate means that the filter medium will provide protection against the particulate in question. See step 9.2 for information on the presence or absence of oil particulates.</p> <p>3 An APF of 10 can only be achieved if the respirator is qualitatively or quantitatively fit tested on individual workers.</p>	

Exposure Guidelines:

Component	CAS No.	Percentage (by wt.)	OSHA PEL		ACGIH TLV		NIOSH REL		UNIT
			TWA	STEL	TWA	STEL	TWA	STEL	
Crystalline Silica	14808-60-7	Approx: 85.0	10/(%SiO ₂ +2)	None	.05	None	.05	None	Mg/m ³

If crystalline silica is heated to more than 870°C, it can change to a form of crystalline silica known as trydimate; if crystalline silica is heated to more than 1470°C, it can change to a form of crystalline silica known as cristobalite. The OSHA PEL for crystalline silica as trydimite or cristobalite is one-half of the OSHA PEL for crystalline silica.

Engineering and administrative controls use designed ventilation systems as the primary method to remove crystalline silica from the workplace environment. Use administrative controls such as job rotation and water spray to supplement engineering controls and respiratory protection. If sandblasting use a respirator approved by NIOSH for abrasive blasting operations. Enclose the operation in a properly designed and maintained blasting enclosure as indicated in "Air Quality: Health for Abrasive Blasting. Final Rule," Federal Register 59.34, 2/18/94.

STORAGE AND HANDLING PRECAUTIONS

Precautions during handling, storage and use: Do not breathe dust. Use adequate ventilation and dust collection. Keep airborne dust concentrations below permissible exposure limit ("PEL"). 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 cloud dust.

If crystalline silica dust cannot be kept below permissible limits, wear a respirator approved for silica dust when using, handling, storing and disposing of this product or bag. 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 and vacuum clothing that has become dusty.

Avoid breakage of bagged material or spills of bulk material. Use dustless methods (vacuum) and place into closable container for disposal, or flush with water. Do not dry sweep. Use control measures.

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 "right to know" laws and regulations should be strictly

followed. Additional precautions can be found in the "American Society for Testing and Materials (ASTM) standard practice C 1132-99a, "Standard Practice for Health Requirements Relating to Occupational Exposure to Respirable Crystalline Silica."

DISPOSAL

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

TRANSPORTATION

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

OTHER INFORMATION

Category	Hazard Material Information System (HMIS)	National Fire Protection Association (NFPA):
Health	*	0
Flammability	0	0
Reactivity	0	0
Protective Equipment	E	N/A
* For further information on health effects – read this MSDS, review references and frequently visit OSHA and NIOSH web sites for updates.		

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