BEST SAND
CORPORATION

Material Safety Data Sheet

Date: July 28, 2006 **Supersedes:** February 15, 2006

SECTION 1 : PRODUCT IDENTIFICATION

Trade Name as Labeled: Silica, Lake or Bank Sand; All Grades
Chemical Name and Formula: Silica, mainly in the form of quartz (crystalline silica); SiO_2

Manufacturer:
Best Sand Corporation
P.O. Box 87
Chardon, OH 44024
Phone: (440) 285-3132

Emergency Telephone Number: (800) 281-9876

"This Best Sand Corporation product is not intended for and is strictly prohibited for sandblasting."

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

Chemical	CAS Number	% by Weight
Crystalline Silica (Quartz)	14808-60-7	87-99.9

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. The OSHA PEL for crystalline silica as trydimite and cristobalite is one-half of the OSHA PEL for crystalline silica (quartz).

SECTION 3: HAZARD IDENTIFICATION

Emergency Overview: The material is white or tan colored free-flowing sand. High airborne levels of dust may cause irritation to eyes and upper respiratory tract. Crystalline silica is an IARC Group 1 carcinogen. Contact with powerful oxidizing agents such as fluorine, chlorine trifluoride, manganese trioxide, oxygen difluoride, may cause fire. It dissolves in hydrofluoric acid and may produce a corrosive gas (silicon tetrafluoride).

Acute Health Effects:

Inhalation: Excessive exposure to high concentrations of dust may cause irritation to the eyes, skin, and mucous membranes of the upper respiratory tract.

Eye: Dusts may cause irritation to the eye. Scratching of cornea can occur if eye is rubbed.

Ingestion: Ingestion of harmful amounts of this product as distributed is unlikely due to its solid insoluble form. Ingestion of excessive amounts of dust may cause nausea or vomiting.

Chronic Health Effects:

Chronic inhalation of respirable crystalline silica may cause silicosis; a fibrosis (scarring) of the lungs. Silicosis may be progressive; it may lead to disability and death. Crystalline silica inhaled from occupational sources is classified as carcinogenic to humans. There is some evidence that inhalation of respirable crystalline silica or silicosis is associated with an increased incidence of scleroderma (an immune system disorder manifested by

fibrosis of the lungs, skin, and other internal organs), and kidney disease. Silicosis is also reported to increase the risk of tuberculosis. Generally, there are no signs or symptoms of exposure to crystalline silica. The condition of individuals with lung disease (e.g., bronchitis, emphysema, chronic obstructive pulmonary disease) can be aggravated by exposure. *See Section 11, Toxicological Information, for additional detail on potential adverse health effects.*

SECTION 4: FIRST AID MEASURES

Inhalation: If there is a gross inhalation of crystalline silica, remove the person immediately to fresh air. Consult a physician as necessary.

Ingestion: Ingestion may cause gastrointestinal discomfort. Dilute by drinking large quantities of water. If discomfort persists, consult a physician.

Eye Contact: Immediately wash eyes with large amounts of water. If irritation or redness persists consult a physician.

Skin Contact: Wash with soap and water. If irritation persists consult a physician.

SECTION 5: FIRE FIGHTING MEASURES

Crystalline silica (quartz) is not flammable, combustible, or explosive.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Accidental Release: Use personal protective equipment recommended in Section 8. Clean up using dustless methods (water or vacuum) to minimize generation and distribution of respirable silica particles. Avoid using compressed air. Collect material in appropriate containers for recovery and recycling or disposal.

Waste Disposal: See Section 12.

SECTION 7: HANDLING AND STORAGE

Handling: Handle the product in accordance with good industrial hygiene and safety practices. Refer to Section 8 for additional information on personal protective equipment. See American Society of Testing and Materials (ASTM) Standard Practice E 1132-99a, "*Standard Practice for Health Requirements Relating to Occupational Exposure to Respirable Crystalline Silica.*" Do not breathe dust. Use proper work practices and adequate ventilation with dust collection to maintain airborne levels of crystalline silica to below the PEL. *Use of this product may generate elevated levels of crystalline silica dust that may not be visible to the unaided eye.* If the airborne exposure levels to crystalline silica cannot be maintained below the PEL, wear a respirator (see Section 8) when handling, storing, or disposing of this product.

Storage: Avoid breakage of bagged material or spills of bulk material. *Note*: Quartz is incompatible with oxidizers such as hydrofluoric acid, fluorine, chlorine trifluoride, or oxygen difluoride (see Section 10).

The OSHA Hazard Communication Standard 29 CFR 1910.1200 and state and local worker or community "Right to Know" laws and regulations should be strictly followed. *Warn your employees (and your customer users in case of resale) by posting and other means of the hazards and the required OSHA precautions to be used. Provide training about the OSHA precautions.*

SECTION 8: EXPOSURE CONTROL/PERSONAL PROTECTION

Local Exhaust: 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). Minimize the collection (build-up) of dust on walls, floors, equipment, and other horizontal surfaces.

Eye Protection: Use safety glasses, goggles, or face shield (as appropriate) under circumstances where particles could cause injury to the eye.

Skin Protection: Good personal hygiene practices should be followed including cleansing of exposed skin with soap and water, and laundering soiled work clothing.

Respiratory Protection: Use a NIOSH-approved air purifying or supplied-air respirator where airborne concentrations of crystalline silica (quartz) are expected to exceed exposure limits (see table below). Appropriate respiratory protection for respirable crystalline silica is based on the airborne exposure concentration and duration of exposure for the particular use of the respirator. A respiratory protection program in accordance with OSHA Standard 29 CFR 1910.134 must be implemented whenever workplace conditions warrant use of a respirator. ANSI Standard Z88.2 (recent revision) "American National Standard for Respiratory Protection." should also be considered. All tight-fitting respirators must be fit-tested either qualitatively or quantitatively for each respirator user. NIOSH recommends the use of respiratory protection when effective engineering controls are not feasible, or while they are being installed to control workplace exposures to crystalline silica.

AIRBORNE CRYSTALLINE SILICA CONCENTRATION	MINIMUM RESPIRATORY PROTECTION
Up to 0.5 mg/m^3	Any air-purifying respirator with a high efficiency particulate air (HEPA) filter.
Up to 1.25 mg/m^3	Any powered, air-purifying, full-facepiece respirator with a HEPA filter. Any supplied-air respirator operated in a continuous-flow mode.
Up to 2.5 mg/m^3	Any powered, air-purifying, full-facepiece respirator with a HEPA filter. Any powered, air-purifying respirator with a tight-fitting facepiece and a HEPA filter.
Up to 25 mg/m^3	Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode.
Emergency or Planned Entry into Unknown Concentrations or Immediately Dangerous to Life or Health (IDLH) Conditions	Up to 500 mg/m^3: Any self-contained breathing apparatus with a full-facepiece and is operated in pressure-demand mode or other positive pressure mode. Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus.
Escape	Any air-purifying, full-facepiece respirator with a HEPA filter. Any appropriate escape-type, self-contained breathing apparatus.
Use only NIOSH-approved respiratory protection. See 29 CFR §1910.134 and 42 CFR §84. See also ANSI standard Z88.2 (latest revision) "American National Standard for Respiratory Protection."	

Exposure Guidelines:

Chemical	Percentage (by wt.)	Exposure Guidelines						Unit
		OSHA		NIOSH		ACGIH		
		TWA	STEL	TWA	STEL	TWA	STEL	
Crystalline Silica (Quartz)	87-99.9	$\frac{10\ mg/m^3\ [a]}{\%\ SiO_2 + 2}$	N.E.	0.05[a]	N.E.	0.025	N.E.	mg/m^3
N.E. = Not Established. a = respirable dust.								
OSHA Permissible Exposure Limits (PEL) and ACGIH Threshold Limit Values (TLV) are an 8-hour time-weighted average (TWA) concentration during a 40-hour workweek. NIOSH Recommended Exposure Limits (REL) is for up to a 10-hour workday during a 40-hour workweek.								

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Vapor Density (Air = 1): Not applicable.
Specific Gravity (Water = 1): 2.65
Solubility in Water: Insoluble in water.
Vapor Pressure: 10mm @ 1730°C
Melting Point: 1710° C
Boiling Point: 2230° C
Evaporation Rate (Butyl Acetate = 1): None.
Appearance and Color: White to tan; odorless.

SECTION 10: STABILITY AND REACTIVITY

Stability: Stable under normal handling and storage conditions.

Hazardous Polymerization: Cannot occur.

Chemical Incompatibility (Materials to Avoid): Contact with powerful oxidizing agents such as fluorine, chlorine trifluoride, manganese trioxide, oxygen difluoride, may cause fires.

Hazardous Decomposition Products: Crystalline silica will dissolve in hydrofluoric acid and produce a corrosive gas (silicon tetrafluoride).

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 (often referred to as Simple Silicosis) is the most common form of silicosis, and can occur after many years of exposure to relatively low concentrations of airborne respirable crystalline silica dust. It is further defined as either simple or complicated silicosis. Lung lesions (shown as radiographic opacities) less than 1 centimeter in diameter characterize simple silicosis, 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 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 the lung disease (cor pumonale).

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 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 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 can be fatal.

Cancer:

IARC: The International Agency for Research on Cancer ("IARC") concluded that there was *"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* 1)." 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 Risks to Humans, Volume 68, "Silica, Some Silicates..." (1997).

NTP: The National Toxicology Program (NTP), in its Ninth Annual Report on Carcinogens, classified "silica, crystalline (respirable)" as a known human carcinogen.

OSHA: Crystalline silica (quartz) is not regulated as a human carcinogen by the Occupational Safety and Health Administration (OSHA) as a carcinogen.

There have been many articles published on the carcinogenicity of crystalline silica, which the reader should consult for additional information. The following are examples of recently published articles:

"*Crystalline Silica and Lung Cancer: The Problem of Conflicting Evidence*", Indoor Built Environ, Volume 8, pp. 121-126 (1998);

"*Crystalline Silica and the Risk of Lung Cancer on the Potteries*", Occup. Environ. Med., Volume 55, pp. 779-785 (1998);

"*Is Silicosis Required for Silica-Associated Lung Cancer*?" American Journal of Industrial Medicine, Volume 37, pp. 252- 259 (2000);

"*Silica, Silicosis, and Lung Cancer: A Risk Assessment*", American Journal of Industrial Medicine, Volume 38, pp. 8-18 (2000);
"*Silica, Silicosis, and Lung Cancer: A Response to a Recent Working Group Report*", Journal of Occupational and Environmental Medicine, Volume 42, pp. 704-720 (2000).
"*NIOSH Hazard Review: Health Effects of Occupational Exposure to Respirable Crystalline Silica.* DDHS (NIOSH) Publication No. 2002-129 (2002).

Autoimmune Diseases: There is evidence that exposure to respirable crystalline silica (without silicosis) or that the disease silicosis is associated with the increased incidence of several autoimmune disorders, -- scleroderma, systemic lupus erythematosus, rheumatoid arthritis and diseases affecting the kidneys. 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: There is evidence that exposure to respirable crystalline silica (without silicosis) or that the disease silicosis is associated with the increased incidence of kidney diseases, including end stage renal disease. For additional information on the subject, the following may be consulted:

"*Kidney Disease and Silicosis*", Nephron, Volume 85, pp. 14-19 (2000).

SECTION 12: DISPOSAL CONSIDERATIONS

General: Disposal of the material should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements. The 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 and Recovery Act, or its regulations, 40 CFR §261 et seq.

The above applies to materials as sold by Best Sand Corporation. 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 13: TRANSPORT INFORMATION

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 14: REGULATORY INFORMATION

United States (Federal and State):

TSCA: Crystalline silica (quartz) is on the EPA Toxic Substance Control Act (TSCA) Section 8(b) inventory under CAS No. 14808-60-7.
RCRA: Crystalline silica (quartz) is not classified as a hazardous waste under the Resource Conservation and Recovery Act (RCRA), 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.

Emergency Planning and Community Right to Know Act (EPCRA): 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) was not processed with or does not contain any Class I or Class II ozone depleting substances.

Clean Water Act: Crystalline silica (quartz) is not listed as a hazardous substance in Section 311.

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

OSHA: Crystalline silica (quartz) is listed under 29 CFR 1910.1000 as a toxic and hazardous substance.

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): Crystalline silica (quartz) is classified as a substance known to the State of California to be a carcinogen.

Canada:

Domestic Substances List (DSL): Best Sand Corporation's products, as naturally occurring substances, are on the Canadian DSL.

WHMIS (Workplace Hazardous Materials Information System) Classification: Class D, Division 2A.

Other:

IARC: Crystalline silica (quartz) is classified in IARC Group 1 Carcinogen.

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 15: OTHER INFORMATION

Web Sites with Information about Effects of Crystalline Exposure:

http://www.osha.gov
http://www.cdc.gov/niosh/silicpag.html

User's Responsibility: The OSHA Hazard Communication Standard 29 CFR 1910.1200 require that this Material Safety Data Sheet be made available to your employees who handle or may be exposed to this product. Educate and train your employees regarding applicable precautions. Instruct your employees to handle this product properly.

Disclaimer: The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for one's own particular use. Since the actual use of the product described herein is beyond our control, Best Sand Corporation assumes no liability arising out of the use of the product by others. Appropriate warnings and safe handling procedures should be provided to handlers and users.

Silica, Lake or Bank Sand

WARNING

Inhalation May Cause Lung Damage

Read Material Safety Data Sheet Before Using Product

Product is not intended for and is strictly prohibited for sandblasting.

This product contains respirable crystalline silica "quartz" (CAS #14808-60-7). Long term or repeated inhalation of respirable crystalline silica can cause fibrosis or scar tissue in the lungs (Silicosis). The International Agency for Research on Cancer (IARC) concluded that crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is carcinogenic to humans (Group 1).

For additional information on this product
Refer to the Material Safety Data Sheet or contact:

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