

MATERIAL SAFETY DATA SHEET

1 of 4 pages



Identity: Concrete Masonry Products (Block, Lintels, Pavers, Regency and Concrete Veneers)

SECTION I

Manufacturer's Name:

General Shale Brick, Inc.
P.O. Box 3547
Johnson City, Tennessee 37602

Emergency Telephone Number
423.914.4188

Contact for Information
Safety Dept.
423.282.4661

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05-29-2014

SECTION II – HAZARDOUS INGREDIENTS/IDENTIFY INFORMATION

Hazardous Components: Silica, Crystalline Quartz (respirable)

Specific Chemical Identity: Silicon Dioxide SiO₂ (CAS 14808-60-7)

Common Names: Silica, Flint, Sand, Crystalline Free Silica, Quartz, Ground Silica, Silica Flour

OSHA PEL: Exposure to airborne crystalline silica shall not exceed an 8-hour time-weighted average limit as stated in 29 CFR 1910.1000 Table Z-1-A, Air Contaminants, specifically:

Silica, Crystalline Quartz (respirable Dust) $\frac{10\text{mg} / \text{m}^3}{\% \text{Quartz} + 2}$

ACGIH TLV: Crystalline Quartz
TLV – TWA = ~~0.1~~ 0.05 mg/M³ (respirable Dust)
See Threshold Limit Value and Biological Exposure Indices for 2000-2001
American Conference of Governmental Industrial Hygienists

Other Limits Recommended: National Institute for Occupational Safety and Health (NIOSH). Recommended standard maximum permissible concentration = 0.05 mg/M³ (respirable free silica) as determined by a full-shift sample up to a 10-hour work day, 40-hour work week. See NIOSH Criteria for a Recommended Standard Occupational Exposure to Crystalline Silica.

SECTION III – PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point:	N/A	Specific Gravity (H ₂ O = 1):	N/A
Vapor Pressure:	N/A	Melting Point:	N/A
Vapor Density:	N/A	Evaporation Rate: (Butyl Acetate = 1)	N/A
Solubility in Water:	Not Soluble		
Appearance and Odor:	Odorless Solid		

SECTION IV – FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used): N/A

Flammable Limits: N/A **LEL:** N/A **UEL:** N/A

Extinguishing Media: N/A

Special Fire Fighting Procedures: None

Unusual Fire and Explosion Hazards: None

SECTION V – REACTIVITY DATA

Stability: **Unstable:** **Stable:** X **Conditions to avoid:** None

Incompatibility (Materials to Avoid): None

Hazardous Decomposition or Byproducts: None

Hazardous Polymerization: **May Occur:** **Will Not Occur:** X **Conditions to Avoid:** None

SECTION VI – HEALTH HAZARD DATA

Route(s) of Entry:

Inhalation? Yes **Skin?** No **Ingestion?** Yes

Health Hazards (Acute and Chronic):

Dry sawing or grinding of concrete masonry products may result in the release of respirable crystalline quartz. Prolonged exposure to respirable crystalline quartz may cause delayed (chronic) lung injury (silicosis). Acute or rapidly developing silicosis may occur in a short period of time in heavy exposure. Silicosis is a form of disabling pulmonary fibrosis, which can be progressive and may lead to death.

Carcinogenicity:

NTP: Yes

The National Toxicology Program (NTP) published its Ninth Annual Report on Carcinogens which concludes that “silica, crystalline (respirable)” is known to be a human carcinogen. The NTP conclusion is based on sufficient evidence for the carcinogenicity of respirable crystalline silica from studies in humans indicates a causal relationship between exposure and increasing lung cancer rates in workers exposed to crystalline silica was reviewed in IARC, 1997; Brown et. al., Horizdot, et. al., 1997

IARC Monographs? Yes

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans (volume 68, 1997) concludes that there is sufficient evidence for the carcinogenicity of crystalline silica to experimental animals, and that there is limited evidence of the carcinogenicity of crystalline silica to humans. IARC Group 1 Carcinogenic to humans.

Signs and Symptoms of Exposure: Undue breathlessness, wheezing, cough and sputum production.

Medical Conditions Generally Aggravated by Exposure:

Pre-existing lung diseases such as emphysema or asthma: Pulmonary function may be reduced by inhalation of respirable crystalline silica. Also lung scarring produced by such inhalation may lead to a progressive massive fibrosis of the lung which may aggravate other pulmonary conditions and diseases and which increases susceptibility

to pulmonary tuberculosis. Progressive massive fibrosis may be accompanied by right heart enlargement, heart failure, and pulmonary failure. Smoking aggravates the effects of exposure.

Emergency and First Aid Procedures:

For sand in eyes during dry sawing or grinding operations, immediately flush generously with water for 15 minutes. If irritation persists, seek medical attention. For gross inhalation, remove person immediately to fresh air, give artificial respiration as needed, seek medical attention as needed.

SECTION VII – PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be taken in Case Material is Released or Spilled:

When dry sawing or grinding, use dustless systems for handling, storage, and clean-up so that airborne dust does not exceed the PEL. Use adequate ventilation and dust equipment. Practice good housekeeping. 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 or vacuum clothing which has become dusty. See also control measures in Section VIII.

Waste Disposal Method:

Normal breakage may be picked up and discarded as common waste. Residue from dry sawing and grinding operations should be disposed of in accordance with Federal, State, and Local regulations.

Precautions to be Taken in Handling and Storing: None

Other Precautions:

See OSHA Hazard Communication Rule 29 CFR Sections 1910.1200, 1915.99, 1917.28, 1918.90, 1926.59, and 1928.21, and state and local worker or community “right to know” laws and regulations. We recommend that smoking be prohibited in all areas where respirators must be used. **WARN YOUR EMPLOYEES (AND YOUR CUSTOMERS – USERS IN CASE OF RESALE) BY POSTING, AND OTHER MEANS, OF THE HAZARD AND OSHA PRECAUTIONS TO BE USED. PROVIDE TRAINING FOR YOUR EMPLOYEES ABOUT THE OSHA PRECAUTIONS.**

See also American Society for Testing and Materials (ASTM) Standard Practice E1132-86, “Standard Practice for Health Requirements Relating to Occupational Exposure to Quartz Dust.”

SECTION VIII – CONTROL MEASURES

Respiratory Protection

The following chart specifies the type of respirators that may provide respiratory protections for crystalline silica.

RESPIRATORY PROTECTION FOR CRYSTALLINE SILICA

CONDITION	MINIMUM RESPIRATORY PROTECTION*
Particulate Concentration	
Up to 5 x PEL	Any dust respirator
Up to 10 x PEL	Any dust respirator, except single-use or quarter-mask respirator. Any fume respirator or high efficiency particulate filter respirator. Any supplied-air respirator. Any self-contained breathing apparatus
Up to 50 x PEL	A high efficiency particulate filter respirator with a full facepiece. Any supplied-air respirator with a full facepiece, helmet, or hood. Any self-contained breathing apparatus with a full facepiece.
Up to 500 x PEL	A powered air-purifying respirator with a high efficiency particulate filter. A type C supplied-air respirator operated in a pressure-demand or other positive pressure or continuous-flow mode.

**Greater than 500 x PEL
or entry and escape from
unknown concentrations**

Self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive mode.

A combination respirator which includes a Type C supplied-air respirator with a full facepiece operated in pressure-demand or other positive pressure continuous-flow mode and an auxiliary self contained breathing apparatus operated in pressure-demand or other positive pressure mode.

*Only NIOSH-approved or MSHA-approved equipment should be used. (see 29 CFR 1910.134).

See also ANSI Standard Z88.2-1980 "Practices for Respiratory Protection."

Ventilation:

Local Exhaust: When dry sawing or grinding concrete masonry products, use sufficient local exhaust to reduce the level of respirable dust to the PEL. See ACGIH "Industrial Ventilation, A manual of Recommended Practice," latest edition.

Mechanical

See "Other Precautions" under Section VII.

Special

See "Other Precautions" under Section VII.

Other

See "Other Precautions" under Section VII.

Protective Gloves

Optional

Eye Protection

When sawing or grinding concrete masonry products, wear protective shield or tight fitting goggles (safety glasses).

Other Protective Clothing or Equipment

Optional

Work/Hygienic Practices

Avoid creating and breathing dust. See "Other Precautions" under Section VII.

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful health effects, which may be caused by exposure to airborne dust particles created by dry sawing or grinding of our products. Customers/users of concrete masonry products must comply with all applicable health and safety laws, regulations, and orders.

Supplemental Information discussing OSHA PEL change

How does the OSHA Permissible Exposure Limit (PEL) of $10/(\% \text{Quartz} + 2)$ compare to the American Conference of Government Industrial Hygienists' (ACGIH) old Threshold Limit Value (TLV) of 0.1 mg/m³?

Most OSHA PELs are set values for a single air contaminant such as cadmium or a related family of contaminants such as the polyaromatic hydrocarbons (PAHs). The PEL for respirable dust containing quartz differs considerably in that it is a function that varies between a value of 0.1 mg/m³ (when the material is pure quartz) up to a value approaching the Particulates Not Otherwise Regulated (PNOR) OSHA PEL of 5 mg/m³. The PEL does not apply below 1% quartz, so the highest it can get is 3.3%. (When the concentration drops below 1%, the PNOR PEL of 5 mg/m³ applies.) It can be shown mathematically that when this PEL function for respirable dust containing quartz is divided into the TWA exposure, the resulting standardized concentration (or exposure severity) is the sum of the standardized concentrations for the separate quartz and PNOR exposures. This derivation requires only simple algebra, but is available in the literature [Frank J. Hearl, "Mixture Formula Justified," Letters to the Editor, AIHA Journal 57, June 1996, p 575 and also in Frank J. Hearl, "Guidelines and Limits for Occupational Exposure to Crystalline Silica," in Silica and Silica-Induced Lung Diseases, V. Castranova, V. Vallyathan, and W. E. Wallace Eds., CRC Press Inc. pp.15-22.] [Note that the derivations count the quartz twice because it is not subtracted from the dust exposure in determining the PNOR exposure. If the quartz were subtracted, the quartz standard of 0.098 mg/m³ would result, which is only very slightly more restrictive than the 0.1 mg/m³ proposed in the (now vacated) Final Rule.] Through the same approach, it is easy to derive the PEL for the mixture of respirable dust containing quartz and cristobalite [PEL = $10/(\% \text{Quartz} + 2(\% \text{Cristobalite}) + 2)$]. The use of these PELs achieves the same result as using the mixture calculation specified in 29 CFR 1910.1000 for exposures to substances having an additive effect on the body or target organ system.