

MEMBER



MATERIAL SAFETY DATA SHEET

Identity: Concrete Masonry Products (Block, Lintels, Pavers, SRW units, ACB, and Concrete Brick)

SECTION I

Manufacturer's Name:

Emergency Telephone Number
(315) 437-0305

Address: **Barnes & Cone, Inc.**
5894 Court street Road
Syracuse, NY 13206

Telephone Number for Information
(315) 437-0305

Date Prepared
30 July 2006

SECTION II – HAZARDOUS INGREDIENTS/IDENTIFY INFORMATION

Hazardous Components: Finished Concrete Masonry Products typically contain the following components that meet the hazard definitions and reporting requirements in 29CFR 1910.1200, the OSHA Hazard Communication standard:

Sand, Aggregates and Flyash (containing Crystalline Silica –Quartz and Cristobalite)
Limestone
Cement

Finished concrete masonry products are made with ingredients that are primarily nuisance dusts although some ingredients may contain crystalline silica. Some finished concrete masonry products may contain traces of residual materials from material enhancement additives such as plasticizers, accelerators, pigments or water repellants. The concentrations of trace materials are expected to be below reporting thresholds for the OSHA Hazard Communication standard.

Specific Chemical Identity: Silicon Dioxide SiO₂ (CAS 14808-60-7)
Limestone (CAS 1317-65-3)
Cement (CAS 65997-15-1 for Portland Cement)
Flyash (Coal Ash by-product CAS 68131-74-8)

Common Names: Sand also known as Silica, Flint, Sand, Crystalline Free Silica, Quartz, Ground Silica, Silica Flour
Limestone also known as marble, marble chips, granite, and calcium carbonate
Cement also known as Portland cement, cement kiln dust, kiln precipitator catch, waste kiln dust, and Ground Granulated Blast Furnace Slag cement
Flyash also known as boiler ash, coal ash byproduct, coal dust, coal flyash and pulverized flyash

Exposure Standards:

Substance	OSHA PEL-TWA	2006 version of ACGIH TLV-TWA®	NIOSH REL-TWA
Sand, Aggregates and Flyash containing crystalline silica (Quartz and Cristobalite)	See PEL formula below for Respirable silica-quartz	0.025 mg/m ³ (Respirable dust)	0.05 mg/m ³ (Respirable dust)
Limestone, Cement (as Portland Cement), Aluminum oxide and Flyash (All treated as Nuisance Particulates)	15 mg/m ³ Total dust 5 mg/m ³ Respirable dust	10 mg/m ³ Inhalable dust	10 mg/m ³ Total dust 5 mg/m ³ Respirable dust
Calcium oxide	5 mg/m ³ Total dust	2 mg/m ³ Inhalable dust	2 mg/m ³ Total dust

OSHA PEL:

The Occupational Safety and Health Administration established Permissible Exposure Limits for the substances potentially present as components of concrete masonry dusts for 8-hour time-weighted average exposures. The OSHA PELs are legal control limits found in 29 CFR 1910.1000, Air Contaminants, Table Z-1, Table Z-2 and Table Z-3.

Exposure to respirable airborne crystalline silica shall not exceed an 8-hour time-weighted average limit as calculated using the formula below from 1910.1000, Table Z-3, Mineral Dusts:

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

For Cristobalite, use ½ the value calculated from the formula for Quartz.

Respirable dusts are particles collected after passing through an appropriate size-selective sampling device meeting the aerodynamic diameter criterion listed in 1910.1000, Table Z-3.

ACGIH TLV:

The American Conference of Governmental Industrial Hygienists established Threshold Limit Values for the substances potentially present as components of concrete masonry dust for 8-hour time-weighted average exposures. The ACGIH TLVs are exposure standards recommended as a matter of good safety and health practice.

NIOSH REL:

The National Institute for Occupational Safety and Health (NIOSH). Recommended Exposure Limits established standard maximum permissible concentrations as determined by a full-shift sample up to a 10-hour work day, 40-hour work week.

Note: The addition of Flyash and Ground Granulated Blast Furnace Slag cement may introduce trace metal contaminants. Exclusive use of Ground Granulated Blast Furnace Slag Cements in a typical concrete or masonry product mixture may add metallic oxides of Aluminum and Calcium in excess of the 1% hazard ingredient reporting threshold by OSHA.

It should be noted that some states have State operated OSHA programs with exposure standards that may be more stringent than the Federal OSHA PELs reported. You should consult the individual OSHA PELs for your state to determine if there are different exposure levels enforced for the substances present in finished concrete masonry products.

SECTION III – PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point:	N/A	Specific Gravity (H₂O = 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):	Concrete and Limestone react with strong acids to liberate carbon dioxide.		
Hazardous Decomposition or Byproducts:	The curing process for concrete masonry products may consume oxygen that should produce no significant hazard under normal operating conditions. Under extreme conditions in an enclosed environment, it could possibly produce an oxygen deficient environment unsuitable for continuous human occupancy. In an enclosed environment, adequate fresh air should be provided and suitable atmospheric testing should be conducted to verify the oxygen content is suitable.		
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?** No

Inhalation is the primary route of entry for substances present in concrete masonry products.

Wet concrete products may cause irritation of the skin after direct skin contact due to the alkaline nature of components blended into the wet concrete slurry. Trace amounts of hexavalent chromium have also been associated with chromate sensitive contact dermatitis in workers exposed to wet cement or concrete. Dry concrete dusts are unlikely to produce skin irritation under expected conditions of exposure; however, if skin irritation is experienced, efforts should be made to prevent skin contact using good hygiene and protective equipment practices. Handling finished concrete masonry products can be abrasive to the skin.

Ingestion is an unlikely route of entry in most occupational settings.

Health Hazards (Acute and Chronic):

Under normal conditions of handling and use, dust exposures from concrete masonry products should be minimal. Finishing processes such as sanding or cutting may release dusts containing respirable crystalline silica. Prolonged exposure to dusts containing respirable crystalline silica may cause delayed (chronic) lung injury (silicosis). Acute or rapidly developing silicosis may occur in a short period of time after heavy exposure. Silicosis is a form of disabling pulmonary fibrosis, which can be progressive and may lead to death. Bronchitis and tuberculosis are also diseases associated with inhalation of dusts containing respirable silica. Some studies indicate an association with lung cancer from exposure to silica.

Carcinogenicity:

Finished concrete masonry products are not considered to be carcinogenic. Concrete dusts created by mechanical finishing processes such as sawing and sanding may contain concentrations of respirable crystalline silica-quartz with carcinogenic classifications by the organizations listed below:

NTP: Yes

The National Toxicology Program (NTP) published its Eleventh 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: Shortness of breath following physical exertion, severe cough, fatigue, loss of appetite, chest pains and fever. (Source NIOSH/DOL Factsheet – “Preventing Silicosis”)

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 may aggravate 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:

Utilize wet methods to minimize airborne dust concentrations whenever feasible. When dry sawing or grinding, use dustless systems for handling, storage, and cleaning so that airborne dust does not exceed the PEL. Use adequate ventilation and dust control/suppression 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

Utilize suitable NIOSH approved respiratory protection devices whenever finished concrete or masonry products are used in a manner that produces dusts in excess of applicable exposure standards. Respirators should be selected based upon the exposure level encountered using industrial hygiene data and accepted respiratory protection practices. Since it is the respirable fraction of primary medical concern for dusts containing crystalline silica, it is advisable to utilize respiratory protection devices with High Efficiency Particulate Arresting capabilities (HEPA filtered). Consult a trained safety and health professional for assistance with proper selection of respiratory protection devices based upon your exposure situation.

All use of respiratory protection devices should be done consistent with requirements in the OSHA Respiratory Protection standard, 1910.134.

The NIOSH Respirator Topics page (www.cdc.gov/niosh/nppt/topics/respirators/) should be consulted for additional information on respiratory protection.

Ventilation:

Local Exhaust: When finishing tasks produce concrete dusts in excess of applicable exposure standards, use sufficient local exhaust to reduce the level of respirable dust below the applicable exposure standard. See ACGIH “Industrial Ventilation, A Manual of Recommended Practice,” latest edition.

Mechanical

Use wet methods whenever feasible to prevent generation of airborne dusts when finishing concrete or masonry products.

Special

See “Other Precautions” under Section VII.

Other

See “Other Precautions” under Section VII.

Protective Gloves

Wear suitable protective gloves to prevent mechanical abrasion of the skin when handling finished concrete masonry products.

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

Utilize wet methods for cutting, sanding or cleaning tasks that produce airborne dust whenever feasible. Avoid creating and breathing dust. Minimize skin contact using good hygiene and protective equipment practices. 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

OSHA continues to consider establishment of a substance specific standard to regulate Silica similar to the regulations found in Subpart Z for Toxic and Hazardous Substances.