

Material Safety Data Sheet: Hardened Portland Cement Concrete

Section 1: Product Information

Trade Name: Hardened portland cement concrete (Note: Also see MSDS on hardened concrete.)
Producer's Name: Granite Rock Company
Address: 411 Walker Street/P.O. Box 50001
Watsonville, CA 95077-5001
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Date Prepared: October, 1999
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Section 2: Hazardous Ingredients

Chemical Names	CAS Number	Quantity (Percent)	Formula	Exposure Limits in Air ACGIH TLV ⁽¹⁾	OSHA PEL ⁽²⁾
Crystalline silica (aggregate)	14808-60-7	approx. 10*	SiO ₂	0.1 mg/m ³	10 mg/m ³ %SiO ₂ +2
Magnesium oxide (cement)	1309-48-4	< 5 **	MgO	10 mg/m ³	15 mg/m ³
Calcium oxide (cement)	1305-78-8	< 10 **	CaO	2 mg/m ³	5 mg/m ³

ACGIH TLV: American Conference of Industrial Hygienist Threshold Limit Value (TLV) time-weighted average (TWA)

OSHA PEL: Occupational Safety and Health Association Permissible Exposure Limit for an 8-hour time weighted average

* Assumes concrete mix is composed of approximately 75% granite aggregate which contain approximately 12% silica as measured by DCM Science Labs, Wheat Ridge, Colorado.

** Assumes concrete mix is composed of 15% portland cement paste.

Section 3: Hazard Identification

Overview: This product contains a combination of aggregates (sand and gravel) bound together by portland cement. The naturally occurring aggregate, typically granite and/or limestone, contains varying amounts of crystalline silica as described herein. When hardened, cutting or demolishing of this product will result in the release of silica containing dusts. This product may also contain small quantities of admixtures from secondary producers including: Daravair M/R, WRDA with Hycol, Eclipse, Daratard 17, Daracem 19, Polarsset, ADVA, DCI Corrosion Inhibitor (from W.R. Grace), fly ash (from Pozzolanic International), and/or calcium chloride (from Hillbrothers Chemical Co.) as well as colors and fibermesh. For information on these products, consult with Graniterock or the manufacturer.

Potential Health Effects

Inhalation

- Silicosis:** Acute silicosis may occur under conditions of extremely high respirable crystalline silica (quartz) exposure. Silicosis is a fibrosis (scarring) of the lungs, and may be progressive.
- Cancer:** Crystalline silica (quartz) inhaled from occupational sources is classified as carcinogenic to humans.
- Autoimmune disorder:** There is evidence that exposure to respirable crystalline silica or silicosis is associated with the increased incidence of scleroderma, an autoimmune disorder.
- Tuberculosis:** Several studies indicate that silicosis increases the risk of tuberculosis.
- Eye contact:** Crystalline silica (quartz) may cause abrasion, irritation, redness and/or watering of the eyes.
- Skin contact:** Not applicable.
- Ingestion:** Not applicable.
- Chronic:** The adverse health effects mentioned above (silicosis, cancer, scleroderma, and tuberculosis) are considered chronic effects.
- Reproductive:** Reproductive toxicity has not been demonstrated.

Medical Conditions Aggravated by Exposure

Respiratory ailments (including bronchitis, emphysema, etc.) may be aggravated by exposure to respirable crystalline silica.

Section 4: First Aid Measures

- Eye contact:** Gently flush eyes with clean water. Seek medical aid if irritation persists or develops.
- Skin contact:** Wash with soap and water. Seek medical aid if irritation persists or develops.
- Inhalation:** Remove from exposure. Seek medical aid if respiratory difficulty persists or develops.
- Ingestion:** Seek medical aid if discomfort is experienced.

Section 5: Fire And Explosion

Will not burn or explode under any conditions. Non-flammable and non-explosive.

Section 6: Accidental Release Measures

Spill Response Procedures: Keep concrete and concrete rinse water away from streams, lakes, and

storm drains by placing earthen beams across runoff pathway. Wait until concrete is sufficiently hardened to handle.

Preparing Waste for Disposal: No special procedures required. Dispose of according to local, state and federal regulations. Not classified as a hazardous waste by the Resource Conservation and Recovery Act. May be readily recycled into baserock by crushing and screening.

Section 7: Handling & Storage

Ventilation and Engineering Controls: Do not breathe dust. Dust suppression controls such as water sprays or dust collection controls such as vents or baghouses should be used where dust generation results from handling. Practice good housekeeping-do not allow dust to collect on walls, floors, ceilings.

Section 8: Exposure Controls/Personal Protection

Respiratory Protection: NIOSH/MSHA approved dust respirators should be used where dust levels exceed or are likely to exceed exposure levels defined in Section 2. Respirator use must comply with applicable MSHA or OSHA standards which include a provision for fit testing, cleaning, training in correct usage and a fitness test for respirator use.

Eye Protection: Safety glasses with side shields should be worn as minimum protection. Should excessively dusty conditions be present, use goggles or face shield.

Gloves: Water proof gloves should be used.

Other Clothing: No special requirements.

Work Practices: Avoid generating dust; use water to wet surfaces.

Hygiene Practices: Wash dust-exposed skin with soap and water.

Other Handling Requirements: Contain material in discrete quantities to avoid particles posing slip/trip hazard.

Protective Measures During Maintenance of Contaminated Equipment: Use respiratory protection, eye protection and gloves if dust is likely to be generated.

Section 9: Physical Properties

Vapor density (air=1): None

Melting point: N/A

Specific gravity: 2.2 - 2.5

Boiling point: N/A

Solubility in water: Insoluble

Evaporation rate: None

Vapor pressure: None

Appearance and odor: Very hard solid containing gray paste and aggregates

How to detect this substance: X-ray diffraction-NIOSH Methods 7500 & 7501

Section 10: Stability and Reactivity

Stability: Crystalline silica (quartz) is stable, will not polymerize, and is known to be compatible with all other substances except strong oxidizing agents such as fluorine, chlorine trifluoride, or oxygen difluoride.

Hazardous Decomposition Products: Silica-containing respirable dust particles may be generated by handling and transport.

Section 11: Toxicological Information on Crystalline Silica

Crystalline silica is a naturally occurring substance found in soil and rock formations. Crystalline silica is present in trace amounts in the atmosphere air as particulate. Crystalline silica is one of several crystalline polymorphs (including trydimite, cristobalite) of silicon dioxide. When heated to 870°C, crystalline silica transforms to trydimite, and when heated to 1,470°C it can transform to cristobalite. Chronic or ordinary silicosis is the most common form of silicosis which can occur after many years of exposure to relatively low levels of airborne respirable dust.

Crystalline silica is listed by the National Toxicology Program in a category which may reasonably be anticipated to be a carcinogen, and by the International Agency for Research on Cancer (IARC) as a Group 1 carcinogenic. After years of study, the non-governing IARC concluded in 1997 that there was "sufficient evidence in humans for the carcinogenicity of crystalline silica in the forms of quartz or cristobalite from occupation sources." The IARC noted that carcinogenicity was not detected in all industries, and that toxicity may depend on "external factors affecting its biological activity or distribution of its polymorphs."

Crystalline silica is listed by the Governor of the State of California, under Proposition 65, as requiring the following warning:

"Detectable amounts of chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm may be found in this product."

Section 12: Ecological Information

There is no data that shows crystalline silica (quartz) is toxic to birds, fish, invertebrates, microorganisms or plants.

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