

Safety Data Sheet for Concrete Products (precast/prestressed concrete)



SECTION 1 – IDENTIFICATION OF MATERIAL AND MANUFACTURER

MATERIAL IDENTITY (TRADE NAMES): PRECAST CONCRETE PRODUCTS

MANUFACTURER'S NAME:

EMERGENCY TELEPHONE NUMBER:

ADDRESS:

TELEPHONE NUMBER FOR INFORMATION:

Product identifiers: Precast/prestressed concrete, architectural precast concrete, structural precast concrete, glass-fiber-reinforced concrete, bridge products.

Recommended use: Precast concrete is widely used as a building or bridge component in many construction applications. This safety data sheet (SDS) covers many types of concrete. The individual composition of hazardous constituents may vary between different concrete types and/or mixture proportions.

Recommended restrictions: None known.

SECTION 2 – IDENTIFICATION OF HAZARDS

If the precast concrete member is to be modified in any way, for example by drilling, grinding, cutting, crushing, or abrasive blasting on site, the entity performing the modification is to comply with the applicable Occupational Safety and Health Administration (OSHA) respirable crystalline silica standard(s): CFR 1910.1053 and/or CFR 1926.1153. Use proper engineering controls, work practices, and personal protective equipment (PPE) to prevent exposure to respirable crystalline silica and concrete dust.

GHS label elements: The product is classified according to the Global Harmonized System (GHS).

Hazard pictograms:



GHS08



GHS07

Potential health effects:

Acute eye: Eye contact to airborne concrete dust may cause immediate or delayed irritation or inflammation.

Acute skin: Skin contact with concrete dust may cause irritation.

Acute inhalation: Cutting, grinding, crushing, drilling, and abrading precast concrete products may generate dust containing respirable crystalline silica. Repeated exposures to very high levels of respirable crystalline silica (quartz) for periods as short as six months may cause acute silicosis.

Acute silicosis is a rapidly progressive, incurable lung disease that is typically fatal. Symptoms include (but are not limited to) shortness of breath, cough, fever, weight loss, and chest pain.

Chronic effects: Prolonged over-exposure to respirable dusts in excess of allowable exposure limits may cause inflammation of the lungs, leading to possible fibrotic changes, a medical condition known as pneumoconiosis (lung disease). Prolonged and repeated inhalation of respirable crystalline silica containing dust in excess of allowable exposure limits may cause a form of silicosis, an incurable noncancerous lung disease that may result in permanent lung damage or death. Chronic silicosis generally occurs after 10 years or more of over-exposure; a more accelerated type of silicosis may occur after 5 to 10 years of higher levels of exposure. Silicosis can be progressive, and symptoms can appear at any time, even years after exposure has ceased. Symptoms of silicosis may include, but are not limited to, the following: shortness of breath; difficulty breathing with or without exertion; coughing; diminished chest expansion; reduction of lung volume; right heart enlargement and/or failure. Persons with silicosis have an increased risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure.

Other health effects: Prolonged over-exposure to respirable dust in excess of allowable exposure limits increases the risk of lung cancer and other nonmalignant respiratory disease and renal and autoimmune effects.

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SECTION 3 – COMPOSITION OF/INFORMATION ON INGREDIENTS

This SDS covers various concrete mixture proportions. The concrete contains mixtures of portland or blended cements; other cementitious materials, such as slag, fly ash, silica fume, and other pozzolans; aggregates; chemical admixtures (chemical admixtures are present in quantities comprising less than 1% of the material); and water. Each of these ingredients may have quartz (silica) as a component. The percent of silica can vary greatly from product to product. Other ingredients such as fiber or pigment may be added and may include small amounts of organic and inorganic materials. Any concentration shown as a range is to protect confidentiality as a trade secret.

Material	SiO ₂ Content, %
Portland cement	22
Class F fly ash	52
Class C fly ash	35
Slag cement	35
Silica fume	85 to 97 (amorphous)
Igneous aggregates Granite Quartz Basalt	20 to 100 (typically 20 to 45)
Sedimentary aggregates Dolomite Limestone Sandstone	1 to 20

Hazardous Components (chemical identity/common names)	CAS No.	Percent of Materials (weight/weight)
Hydraulic cement(s) Portland and/or slag cement	65997-15-1	3% to 30%
Limestone (calcium carbonate CaCO ₃) Coarse aggregate Fine aggregate	1317-65-3	0% to 80% 30% to 60% 20% to 50%
Aggregate (sand, gravel, slag, expanded shale) Crystalline silica (quartz and igneous) Coarse aggregate Fine aggregate	14808-60-7	20% to 80% 30% to 60% 20% to 50%
Fly ash	68131-74-8	0% to 5%
Silica fume (amorphous silica)	7631-86-9	≤ 3
Iron oxide pigments	1309-37-1, 20344-49-4, 1317-61-9	≤ 3
Particulates not otherwise classified	Not applicable	Not applicable

There are no additional ingredients present that, within the current knowledge of the supplier and in applicable concentrations, are classified as hazardous to the health or the environment and hence require reporting in this section.

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SECTION 4 – FIRST AID MEASURES

For concrete dust:

Eye contact: Rinse eyes thoroughly with water for at least 15 minutes, including under lids, to remove all particles. Seek medical attention for abrasions and burns or if irritation persists.

Inhalation: Dusts from hardened product may irritate the mouth, throat, and lungs. Remove person to fresh air. Encourage individual to cough, spit, and blow nose to remove dust. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or later develops.

Ingestion: Do not induce vomiting. If conscious, have person drink plenty of water. Seek medical attention or contact poison control center immediately.

SECTION 5 – FIREFIGHTING MEASURES

Flash point: Not combustible.	Flammable limits: Not flammable.	LEL: Not applicable.	UEL: Not applicable.
Extinguishing media: This material is noncombustible. Use extinguishing media appropriate to surrounding fire.			
Hazards due to unusual fire and explosion: None reported. Spalling of hardened concrete may occur under conditions of intense heat. Avoid breathing dust.			

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Hardened concrete is not listed as a hazardous waste under designations by the U.S. Environmental Protection Agency or Department of Transportation. Use dust-control measures to minimize generation of airborne dust. Avoid inhalation of dust. Wetting the concrete prior to cleanup may be necessary to suppress dust. Wear appropriate PPE. Follow applicable federal, state, and local regulations governing waste disposal.

SECTION 7 – HANDLING AND STORAGE

Respirable crystalline silica-containing dust may be generated during crushing, cutting, grinding, or drilling concrete products, or during handling and storage. Use all appropriate measures of dust control or suppression, and PPE described in section 8. Use engineering controls (for example, wetting stockpiles) to prevent windblown dust.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Component	OSHA PELs (permissible exposure limits)	OSHA PELs (action levels)
Crystalline silica (quartz) (Concrete contains aggregate materials that may contain crystalline silica.)	50 µg/m ³	25 µg/m ³
Particulates not otherwise classified	15 mg/m ³ (total) 5 mg/m ³ (respirable)	

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SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Solid	Lower and upper explosive (flammable) limits:	No test data available
Color:	Various (gray or white, unless colored by admixture)	Vapor pressure:	Not applicable
Odor:	Odorless	Vapor density:	Not applicable
Odor threshold:	Not applicable	Relative density:	1.5 to 3.0
Ph (as a solid)	Not applicable	Solubility:	Not applicable
Melting point:	Not applicable	Solubility in water:	Insoluble
Boiling point:	Not applicable	Partition coefficient: n-octanol/water:	Not applicable
Flash point:	Not applicable	Auto-ignition temperature:	Not applicable
Burning time:	Not applicable	Decomposition temperature:	Not applicable
Burning rate:	Not applicable	Freezing point:	Not applicable
Evaporation rate:	Not applicable	Viscosity:	Not applicable
Flammability (solid, gas)	No		

SECTION 10 – STABILITY AND REACTIVITY

Reactivity:	Stable under normal conditions of use.
Chemical stability:	The product is stable.
Possibility of hazardous reactions:	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid:	No specific data.
Incompatible materials:	Hardened concrete will react with most acids in a neutralization-type reaction. Heat, spattering and evolution of potentially toxic gases (such as HCl, NO, or NO ₂) may result depending on the acid involved. Prolonged contact of an acid with the concrete may cause etching or other damage.
Hazardous decomposition products:	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Hazardous polymerization:	Will not occur.

SECTION 11 – TOXICOLOGY INFORMATION

The major concern is silicosis, caused by the inhalation and retention of respirable crystalline silica dust. Silicosis can exist in several forms: chronic or acute. Simple silicosis 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 cm in diameter. Advanced complicated silicosis or PMF may lead to death or heart disease secondary to the lung disease. Prolonged over-exposure to respirable dust in excess of allowable exposure limits increases the risk of lung cancer and other nonmalignant respiratory disease and renal and autoimmune effects.

Concrete products are not listed as a carcinogen by OSHA.

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SECTION 12 – ECOLOGICAL INFORMATION

Toxicity:	Hardened concrete is inert.
Persistence and degradability:	Not applicable.
Bioaccumulation potential:	Not applicable.
Mobility in soil:	Not applicable.
Other adverse effects:	No known significant effects or critical hazards.
Ecotoxicity:	No recognized unusual toxicity to plants or animals.

SECTION 13 – DISPOSAL CONSIDERATIONS

Disposal methods: Can be recycled. Inert. Dispose of waste hardened material in a designated area or landfill in compliance with local, state, and federal laws and regulations.

SECTION 14 – TRANSPORT INFORMATION

This product is not classified as a hazardous material under U.S. DOT regulations.

SECTION 15 – REGULATORY INFORMATION

OSHA hazard communication: This product, in an unmodified state, is not considered by OSHA to be hazardous and need not be included in the employer's hazard communication program. The hazards described in this SDS apply to the product if aerosol or respirable dusts are generated from use (cutting, grinding, drilling, abrasive blasting, pulverizing, etc.). Respirable crystalline silica (airborne particulates of respirable size) generated during use is a substance known to be a carcinogen.

SECTION 16 – OTHER INFORMATION

Approval date: July 16, 2018

Date of previous SDS: November 16, 2016

Notice to reader: The information contained in this SDS is based on hazard information from sources considered technically reliable and has been prepared in good faith in accordance with available information. The SDS should not be construed as the sum of all protective measures that may be taken. It is the responsibility of the employer to evaluate the information and to determine the extent of the hazard and what personal protective measures should be taken. Employers must ensure that SDSs are readily accessible to employees.