

# Material Safety Data Sheet

## Freshly Mixed Unhardened Concrete

### 1 – IDENTIFICATION

Freshly Mixed Unhardened Concrete  
also called Ready-Mixed Concrete,  
Portland Cement Concrete, &/or Flowable Fill

### 2 -- PRODUCT AND COMPONENT DATA

Concrete is a mixture of Portland and other cements, gravel and/or crushed limestone, sand, and water. It may also contain fly ash, silica fume, fibers and/or chemical admixtures.



Ingredients	%	OSHA-PEL	NIOSH-REL	CAS No.
Portland Cement*	10 - 25	5.0 mg/m3 respirable dust 15.0 mg/m3 total dust	5.0 mg/m3 respirable dust 10.0 mg/m3 total dust	65997-15-1
Aggregates*	35 - 90	5.0 mg/m3 respirable dust 15.0 mg/m3 total dust	5.0 mg/ M3 respirable dust 10.0 mg/m3 total dust	Limestone 1317-65-3 Sand & Gravel None
Fly Ash*	0 - 15	5.0 mg/m3 respirable dust 15.0 mg/m3 total dust	5.0 mg/m3 respirable dust 10.0 mg/m3 total dust	68131-74-8
Slag Cement*	0 - 15	5.0 mg/m3 respirable dust 15.0 mg/m3 total dust	5.0 mg/m3 ** respirable dust 10.0 mg/m3 total dust	
Water	5 - 25	None	None	77321-85
Crystalline Silica SiO2	> 1	See note below*	See note below*	14808-60-7

*\*Each of these ingredients may have quartz [silica (SiO2)] as a component. The percent of silica varies greatly from product to product and also within the same product. Silica exposure may occur when respirable dust is present. Dust is not present in Freshly Mixed Unhardened Concrete. The OSHA-PEL for respirable crystalline silica =  $10 \text{ mg/m}^3 \div (\% \text{SiO}_2 + 2)$  and the ACGIH TLV for respirable silica =  $0.05 \text{ mg/m}^3$ .*

*\*\*Slag Cement may contain any or all of the following: Calcium Oxide, Fused Silca Oxide, Mangesium Oxide, Aluminum Oxide, Sulfur, Manganese Oxide, Postassium Oxide, Sodium Oxide, Titanium Oxide, and Ferric Oxide, CAS Nos.; 1305-78-8,60676-86-0, 1309-48-4, 1344-28-1, 7704-34-9, 7439-96-5, 12136-45-7, 12401-86-4, 13463-67-7, 1309-37-1. Since Blast Furnace Slag Cement is manufactured from*

*materials mined from the earth, and process heat is provided by burning fuels derived from the earth, trace but detectable amounts of naturally occurring metals, and possibly harmful elements may be found during chemical analysis. Ingredients are expressed as oxides for quantitative purposes. Actual oxides do not generally occur in "free form" but rather as complex silica-based glasses or crystals. May contain more than 0.1% of free crystalline silica.*

The chemical admixtures are present in quantities comprising less than 1%. These chemical admixtures can be both dry and/or liquid. Admixtures contained in Freshly Mixed Unhardened Concrete at the time of delivery would have no effect on the hazards associated with the use of Fresh Mixed Unhardened Concrete.

The hazardous ingredients associated with dust from concrete cannot become airborne in plastic (wet) concrete. When water is added to the dry ingredients a reaction occurs with the calcium oxide that is present to form calcium hydroxide, a high alkalinity chemical which can irritate the eyes and skin upon contact. The product is delivered as a ready mixed unhardened concrete. There is no dust hazard present from the wet product. An OSHA-PEL or a NIOSH-REL would not apply at the time of delivery. Component product Material Safety Data Sheets are available upon request.

### **3-- PHYSICAL/CHEMICAL CHARACTERISTICS**

**Boiling Point** NA **Specific Gravity** (H<sub>2</sub>O = 1) 1.5 – 3.0

**Vapor Pressure** NA **Melting Point** NA

**Vapor Density** (Air = 1) NA **Evaporation Rate** (Butyl Acetate = 1) NA

**Solubility in Water** Slight (0.01 to 1%) **pH** (in water) (ASTM D 1293-95) 12 to 13

**Appearance and Color** Odorless gray, plastic, flowable, granular mud

### **4 -- FIRE AND EXPLOSION HAZARD**

**Flash point** NA **Flammable Limits** NA

**LEL** NA **UEL** NA

**Extinguishing Media** NA **Special Fire Fighting Procedures** NA

**Unusual fire and Explosion Hazards** None

### **5 -- REACTIVITY DATA**

**Stability** Stable

**Conditions to Avoid** None known

**Incompatibility (Materials to avoid)** Strong Acids

**Hazardous Decomposition Products** None known

**Hazardous Polymerization** Will not occur

### **6 -- HEALTH HAZARDS**

**Emergency Overview:** Short term exposure to wet concrete is not likely to cause an immediate hazard. However, freshly mixed unhardened (plastic) concrete has a high alkalinity level which can cause skin and eye irritation. Exposure of sufficient duration to wet concrete can cause serious, potentially irreversible tissue (skin or eye) damage in the form of chemical (caustic) burns. Take appropriate precautions to minimize direct contact with the product. See **Personal Protective Equipment** precautions in Section 7 below.

**Routes of Entry:** Skin Contact, Eye Contact, Ingestion

**Effects of Acute Exposure:** Plastic concrete can dry the skin and cause alkali burns (cement dermatitis). Prolonged exposure may irritate the skin and cause a burning sensation, particularly in areas of prior abrasion or irritation. Contact with plastic concrete can cause irritation of the eye. Ingestion may cause throat irritation.

**Effects of Chronic Exposure:** Hypersensitive individuals may develop an allergic dermatitis. This product may contain crystalline silica. Since freshly mixed unhardened concrete is a wet product, the risk of silica inhalation is negligible and should not present a significant health hazard.

**Emergency and First Aid Procedures:** Irrigate eyes with copious amounts of water. Wash exposed areas of the body with soap and water. Saturated or contaminated clothing should be removed and washed before re-use. If irritation persists, obtain medical attention.

**Carcinogenic Potential:** Freshly Mixed Unhardened Concrete is not listed as a carcinogen by NTP, OSHA, or IARC. Concrete frequently contains crystalline silica in concentrations greater than 0.1%,. Respirable crystalline silica is classified by IARC (International Agency for Research on Cancer) as a known human carcinogen and by NTP (National Toxicology Program) as "reasonably anticipated to be a carcinogen." Crystalline silica in wet concrete is not respirable and does not pose a health hazard. See **Additional Precautions** in Section 7 below.

## 7 -- PRECAUTIONS FOR SAFE HANDLING AND USE

**Personal Protective Equipment:** Use barrier creams, gloves, boots, and clothing to protect skin from prolonged contact with plastic concrete. Particularly protect abrasions of the skin from contact with plastic concrete. Wear

safety glasses or goggles when placing methods cause splashing of the plastic concrete.

**Waste Disposal Methods:** Spills of plastic concrete should be allowed to harden, when it can be disposed of as common waste. All disposals should be accordance with local regulations.

**Additional Precautions:** Any cutting, grinding, or scarifying of dry hardened concrete can cause dusting of the concrete. Dust created in this fashion may contain crystalline silica. Repeated and prolonged inhalation of respirable crystalline silica in excess of appropriate exposure limits can cause scarring of the lungs or a progressive lung disease called silicosis. Silicosis may aggravate other chronic lung related conditions. Smoking is strongly suspected of aggravating the effects of silica exposure and may increase the risk of lung cancer. When cutting, grinding, or scarifying dry hardened concrete, appropriate precautions must be taken to prevent inhalation of the dust. Engineering controls such as dust suppression or capture should be employed. When this is not possible a NIOSH - MSHA approved respirator should be used when the TLV is exceeded.

Ready-Mixed Concrete is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA). In October 1996, an IARC Working Group re-assessing crystalline silica, a component of this product, designated respirable crystalline silica as carcinogenic (Group 1). The NTP's Report on Carcinogens, 9th Edition, lists respirable crystalline silica as a "known human carcinogen". In year 2000, the American Conference of Governmental Industrial Hygienists (ACGIH) listed respirable crystalline silica (quartz) as a suspected human carcinogen (A-2). These classifications are base on sufficient evidence of carcinogenicity in certain experimental animals and on selected epidemiological studies of workers exposed to crystalline silica.

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