

# MATERIAL SAFETY DATA SHEET

## (MSDS)

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### SECTION I - MATERIAL IDENTIFICATION AND USE

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Material Name: Portland Cement Concrete  
Manufacturer's Name:  
Address:  
Supplier's Name:  
Address:  
Chemical Name: Not applicable  
Chemical Family: Portland Cement Product  
Chemical Formula: Mixture cementitious material, aggregates and water  
Trade Name & Synonyms: Ready mixed concrete, concrete  
Molecular Weight: Not applicable  
Material Use: Construction materials

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### SECTION II - HAZARDOUS INGREDIENTS OF MATERIAL

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Concrete is a mixture of inert gravel or rock, sand, Portland Cement and water. It may also contain chemical admixtures and/or flyash and/or granulated slag and/or silica fume, which have no effect on the hazards associated with the use of the product. The chemical admixtures are present in quantities comprising less than 1% of the material.

<u>Hazardous Ingredients</u>	<u>%</u>
Portland Cement (CAS 65997-15-1)	10 - 20
Quartz (SiO <sub>2</sub> ) (CAS 14808-60-7)	3 - 7
Portlandite (Ca (OH) <sub>2</sub> ) (CAS 1305-62-0)	2 - 4

The hazardous ingredients in plastic (wet) concrete cannot become airborne. However, water added to the materials reacts with some of the ingredients to form calcium hydroxide, a corrosive chemical that will irritate the eyes and skin upon contact. Concrete dust from dried Portland Cement Concrete may also contain hazardous ingredients in sufficient concentrations to cause skin, eye, or respiratory irritation.

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### SECTION III - PHYSICAL DATA FOR MATERIAL

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Physical State:	Plastic until it becomes solid upon setting
Odour and Appearance:	Odourless, grey, plastic, flowable and granular
Odour Threshold:	None
Specific Gravity:	Normal range 1.5 to 2.9
Vapour Pressure:	Not applicable
Vapour Density:	Not applicable
Evaporation Rate:	Not applicable
Boiling Point:	Not applicable
Freezing Point:	(0°C)
Solubility in Water:	0.1%
pH:	pH12 - pH13

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### SECTION IV - FIRE AND EXPLOSION HAZARD OF MATERIAL

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Not applicable

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### SECTION V - REACTIVITY DATE

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Not applicable

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### SECTION VI - TOXICOLOGICAL PROPERTIES OF MATERIAL

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(a) Plastic Concrete

Toxicological Properties

Plastic concrete has an alkalinity level of pH12 to pH13 that can cause skin and eye irritation.

Route of Entry: Skin contact, eye contact, ingestion

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## SECTION VI - TOXICOLOGICAL PROPERTIES OF MATERIAL - Cont'd

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Effects of Acute Exposure: Plastic concrete can cause alkali burns and eye irritations and burns. Ingestion may cause irritation of the throat.

Effects of Chronic Exposure: Damage to the epidermis and dermis (outer layers of skin).

(b) Hardened or "Set" Concrete

Sawing or other demolition techniques may result in exposure to dust that may contain hazardous ingredients of the constituent products as follows:

(i) Portland Cement and Portlandite

Toxicological Properties:

The hazardous ingredients when in contact with water produce calcium hydroxide, with an alkalinity level of pH12 to pH13. This level of alkalinity can cause skin and eye irritation.

Route of Entry:

Skin contact, eye contact, inhalation, and ingestion.

Effects of Acute Exposure:

wet cement mixtures can dry skin, cause alkali burns and irritate the eyes and the upper respiratory tract. Ingestion can cause inflammation of the throat.

Effects of Chronic Exposure:

Cement dust can cause inflammation of the tissue lining, the interior of the nose and the cornea (white) of the eye. Hypersensitive people may develop allergic dermatitis.

Exposure Limits:

0. Reg. 654/86 (8hr TWAEV)* .....	10 mg/m <sup>3</sup> (total dust)
ACGIH (TLV-8hr TWA).....	10 mg/m <sup>3</sup> (total dust)
MSHA (8hr - TWA).....	50 mppcf**
OSHA (PEL 8hr TWA).....	50 mppcf

\* Time Weighted Average Exposure Value (for 8hr day - 40 hr week)

\*\* Million particles per cubic foot

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## SECTION VI - TOXICOLOGICAL PROPERTIES OF MATERIAL - Cont'd

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Portland Cement and Portlandite are not known to constitute a carcinogenic, reproductive, teratogenic, or mutagenic hazard.

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(ii) Quartz (SiO<sub>2</sub>)

Route of Entry:

Skin contact, eye contact, and inhalation chronic.

Effects of Acute Exposure:

Exposure to dust may irritate respiratory system, eyes and skin.

Effects of Chronic Exposure:

- (1) Chronic exposure to respirable dust at levels exceeding exposure limits has caused pneumoconiosis.
- (2) Chronic exposure to respirable sand and gravel dust containing quartz at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling, and in extreme instances, lead to death. Symptoms may appear at any time, even years after exposure have ceased. Symptoms of silicosis may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, diminished chest expansion, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest Xray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure.

LD50 of Material (Species and Route): Not applicable

LC50 of Material (Species and Route): Not applicable

Exposure Limits:

Respirable silica dust - 0.2 mg/metre<sup>3</sup> (TWAEV)

TWAEV - Time Weighted Average Exposure Values

For additional information on the above exposure limits, consult Ontario Regulations 654/86 and 769/83, amended 23/87.

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## SECTION VI - TOXICOLOGICAL PROPERTIES OF MATERIAL – Cont'd

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Irritancy of Material:

Respiratory system, eyes, skin.

Carcinogenicity, Reproductive Effects, Teratogenicity, Mutagenicity:

As of the date of preparation of this MSDS:

- (1) Sand and gravel is not included on the ACGIH, IARC, NTP or OSHA lists of potential carcinogens.
- (2) Silica, in the form of crystalline Quartz and as a component of this material, is listed as a potential carcinogen by IARC, but not by ACGIH, NTP or OSHA. IARC (International Agency for Research on Cancer) has determined that there is sufficient evidence of carcinogenicity of crystalline silica to experimental animals, and that there is limited evidence of the carcinogenicity to humans. Limited evidence of carcinogenicity indicates that causal interpretation is credible, but alternate explanations such as chance, bias or confounding factors could not adequately be excluded. There is no evidence that sand and gravel is a teratogen, mutagen or has a reproductive effect.

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## SECTION VII - PREVENTATIVE MEASURES

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Personal Equipment: Use gloves, boots and clothing to prevent skin contact. Wear safety glasses or goggles to prevent contact with eyes. Wear an approved respirator if exposed to dust from hardened concrete when sawing or using other demolition methods.

Engineering Controls (specify): Provide ventilation when sawing or using other demolition techniques to maintain dust concentrations below exposure limits listed in Section VI.

Leak and Spill Procedure: Sweep and shovel into waste disposal containers. Flush with water hose for final clean up of floors, walkways, etc.

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## SECTION VII - PREVENTATIVE MEASURES - Cont'd

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Waste Disposal:	At approved landfill or waste disposal sites in accordance with local regulations.
Handling Procedures and Equipment:	As above.
Storage Requirements:	Not applicable
Special Shipping Information:	Not applicable

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## SECTION VIII - FIRST AID MEASURES

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Wash exposed areas of the body with soap and water,  
Irrigate eyes with large amounts of water,  
Consult a physician in cases of severe exposure,  
In case of accidental ingestion, drink two or three glasses of milk, call a physician and do not induce vomiting.

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## SECTION IX - PREPARATION DATE OF MSDS

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Prepared by:	Tri City Ready Mix Ltd. 36 Manitou Drive Kitchener, Ontario N2C 1L3 (519) 894-0900
Date:	January 25 <sup>th</sup> , 2010

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