

MATERIAL SAFETY DATA SHEET

SECTION 1 – MATERIAL IDENTIFICATION AND USE

<u>Material Name:</u>	Portland Cement Concrete
<u>Manufacturer's Name:</u>	Quality Concrete Limited
<u>Address:</u>	20 MacDonald Ave., Dartmouth Nova Scotia B3B 1C5
<u>Supplier's Name:</u>	Quality Concrete Limited
<u>Address:</u>	20 MacDonald Ave., Dartmouth Nova Scotia B3B 1C5
<u>Chemical Name:</u>	Not Applicable
<u>Chemical Family:</u>	Portland Cement Product
<u>Chemical Formula:</u>	Mixture cementitious material, aggregates, and water
<u>Trade Name and Synonyms:</u>	Ready Mixed Concrete; Concrete
<u>Molecular Weight:</u>	Not Applicable
<u>Material Use:</u>	Construction Materials

SECTION 2 – HAZARDOUS INGREDIENTS OF MATERIAL

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.

HAZARDOUS INGREDIENTS

Portland Cement	(CAS 65997-15-1)	10 – 20%
Quartz (SiO ₂)	(CAS 14808-60-7)	3 – 7%
Portlandite (Ca(OH) ₂)	(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 which 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.

SECTION 3 – PHYSICAL DATA FOR MATERIAL

<u>Physical State:</u>	Plastic until it becomes solid upon setting
<u>Odor and Appearance:</u>	Odorless, gray, plastic flowable, and granular
<u>Odor Threshold:</u>	None
<u>Specific Gravity:</u>	Normal range 1.5 to 2.9
<u>Vapor Pressure:</u>	Not applicable
<u>Evaporation Rate:</u>	Not applicable
<u>Boiling Point:</u>	Not applicable
<u>Freezing Point:</u>	0°C
<u>Solubility in Water:</u>	0.1%
<u>pH:</u>	pH12 – pH13

SECTION 4 – FIRE AND EXPLOSION HAZARD OF MATERIAL

Not applicable

SECTION 5 – REACTIVITY DATA

Not applicable

SECTION 6 – TOXICOLOGICAL PROPERTIES OF MATERIAL

(a) PLASTIC CONCRETE

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

Route of entry: Skin contact, eye contact, and ingestion.

Effects of acute exposure: Plastic concrete can cause alkali burns and eye irritation 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 which 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, Ingestion.

Effects of Acute Exposure: Cement and wet cement mixtures can dry skin, cause alkali burns, and irritate the eyes and 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:

O. Reg 854/86 (8hr TWAEV)* 10 mg/m³ (total dust)

ACGIH (TLV – 8hr TWA) 10 mg/m³ (total dust)

MSHA (8hr – TWA) 50 mppcf**

OSHA (PEL 8hr TWA) 50 mppcf

* Time weighted average exposure value (for 8hr day – 40hr week)

** million particles per cubic foot

Portland cement and Portlandite are not known to constitute carcinogenic, reproductive, teratogenic, or mutagenic hazards.

(ii) **Quartz (SiO₂)**

Route of Entry: Skin contact, eye contact, inhalation chronic.

Effects of Acute Exposure to Material: Exposure to dust may irritate respiratory system, eyes, and skin.

Effects of Chronic Exposure to Material:

- (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 has 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 X-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effect of silica exposure.

LD50 of Material (Specify species and route): Not applicable

LC50 of Material (Specify species and route): Not applicable

Exposure Limits:

- (1) Respirable Silica Dust – 0.2 mg/m³ (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.

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 or crystalline silica to experimental animals, and that there is limited evidence of the carcinogenicity to humans. Limited evidence of carcinogenicity indicates that casual 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, a mutagen, or has a reproductive effect.

SECTION 7 – PREVENTATIVE MEASURES

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 6.

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

Waste Disposal: At approved landfill or waste disposal site in accordance with local regulations.

Handling Procedures and Equipment: As above.

Storage Requirements: Not applicable.

Special Shipping Information: Not applicable.

SECTION 8 – FIRST AID MEASURES

Wash exposed areas of body with soap and water.

Irrigate eyes with large amounts of water.

Consult 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.

SECTION 9 – PREPARATION DATE OF MSDS

Prepared by: (Group/Department)

Ready Mixed Concrete Association of Ontario
365 Brunel Road, Unit 3
Mississauga, Ontario L4Z 1Z5

Date: January 1, 2014

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