MATERIAL SAFETY DATA SHEET (MSDS)

SECTION 1 – CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name:	Ready Mix Concrete (Concrete)
Product Identifier:	Freshly Mixed Cement, Mortar, Concrete, or Grout
Manufacturer's Name:	Miller Concrete
Address:	287 Ram Forest Rd., Gormley ON, L0H 1G0
Information Telephone Number:	(905)726-9518
Emergency Telephone Number:	Canutec: (613)996-6666
Product Use:	Concrete is used as a building material in most types of construction. Concrete is plastic, until it becomes solid upon setting.

SECTION 2 – COMPOSITION/INFORMATION ON INGREDIENTS

Concrete is a mixture of inert gravel or rock, sand, Portland Cement and water. It may also contain chemical admixtures and/or pigments and/or fly ash and/or granulated slag and/or silica fume. The chemical admixtures are present in quantities comprising less than 1% of the material.

Component	**Percent (Weight / Weight)**	**CAS Number**	**LD_{50} (mg/kg)**	**LC_{50}**
Coarse Aggregate	30 to 60	NA	NA	NA
Fine Aggregate	20 to 50	NA	NA	NA
Limestone	≤ 5	1317-65-3	NA	NA
Portland Cement	5 to 30	65997-15-1	NA	NA
Ground Granulated Blast Furnace Slag	≤ 20	65996-69-2	NA	NA
Fly Ash	≤ 15	68131-74-8	NA	NA
Silica Fume	≤ 3	7631-86-9	3160 (rat)	NA
Water	5 to 15	7732-18-5	>90000 (rat)	NA
Iron Oxide Pigments	≤ 3	1309-37-1, 20344-49-4, 1317-61-9	NA	NA
Carbon Pigments	≤ 3	1333-86-4	>15400 (rat)	
Admixtures (Organic and Inorganic)	≤ 1	NA	NA	NA
Calcium Hydroxide	2 to 4	1305-62-0	7300 (mouse)	NA
Quartz	3 to 7	14808-60-7	NA	NA

Table 1: Information on Ingredients

SECTION 3 – HAZARDS IDENTIFICATION

Emergency Overview:	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. Dust from hardened concrete may also contain hazardous ingredients in sufficient concentrations to cause skin, eye, or respiratory irritation.	
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
	Effects of Acute Exposure:	Plastic concrete can cause alkali burns, eye irritations and burns. Ingestion may cause irritation of the throat, and burns in the mouth, throat, stomach, and digestive tract.
	Effects of Chronic Exposure:	Damage to the epidermis and dermis (outer layers of skin).
Hardened Concrete:	Dust from sawing or other demolition techniques may result in exposure to hazardous ingredients of the constituent products as follows:	
	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:	Cement and 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 of the eye. Hypersensitive people may develop allergic dermatitis.
	Quartz	
	Route of Entry:	Skin contact, eye contact, and inhalation .
	Effects of Acute Exposure:	Exposure to dust may irritate respiratory system, eyes and skin.
	Effects of Chronic Exposure	Chronic exposure to respirable dust at levels exceeding exposure limits has caused pneumoconiosis. 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 effects of silica exposure.

SECTION 4 – FIRST AID

Skin Contact:	Wash exposed areas of the body promptly with soap and water. Get medical attention in cases of severe exposure.
Eye Contact:	Immediately Irrigate eyes with large amounts of water, including under lids. Get prompt medical attention.
Ingestion:	In case of accidental ingestion, drink plenty of water, call a physician and do not induce vomiting.
Inhalation:	Remove to fresh air. Get medical attention if coughing and other symptoms do not subside.

SECTION 5 – FIRE FIGHTING MEASURES

Conditions of Flammability	Not Flammable
Means of Extinction	NA
Flash Point	NA
Upper Flammable Limit	NA
Lower Flammable Limit	NA
Auto-Ignition Temperature	NA
Hazardous Combustion Products	NA
Explosion Data	NA

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Wear appropriate PPE (Section 8).

Place concrete into waste disposal container, or capture concrete in a designated area. When environmental restrictions allow, flush contaminated area with water hose for final cleanup.

Allow concrete to harden before disposing according to local, provincial and federal regulations (Section 13).

SECTION 7 – HANDLING AND STORAGE

Handling: Wear appropriate PPE (Section 8).

Storage: Concrete is delivered to the end user in a semi-fluid state ready to be placed to set in final position.

SECTION 8 – EXPOSURE CONTROLS AND PERSONAL PROTECTION

Component	CAS Number	OSHA-PEL mg/m³ TWA	ACGIH-TLV mg/m³ TWA	Ontario mg/m³ TWA
Portland Cement	65997-15-1	15(T); 5(R)	1(R)*	1(R)* O.Reg. 833/90
Calcium Hydroxide	1305-62-0	15(T); 5(R)	5(T)	5(T)* O.Reg. 833/90
Quartz	14808-60-7	10/[%Quartz + 2](R) 30/[%Quartz + 2](T)	0.25(R)	0.1(R) O.Reg. 490/09

*Exposure limits with [quartz] < 1%

Table 2: Exposure Limits

PPE: Use waterproof gloves and CSA- approved boots to prevent skin contact. Long sleeve shirts and pants should be worn to further avoid skin contact. Wear ANSI- or CSA- approved safety glasses or goggles to prevent contact with eyes. Wear a NIOSH-approved respirator (N95 rating or greater), that has been properly fitted and is in good condition, if exposed to dust from hardened concrete when sawing or using other demolition methods.

Engineering Controls: Provide ventilation when sawing or using other demolition techniques to maintain dust concentrations below exposure limits listed in Table 2.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

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:	NA
Vapour Density:	NA
Evaporation Rate:	NA
Boiling Point:	NA
Freezing Point:	(0°C)
Solubility in Water:	0.1%
pH:	pH12 - pH13

SECTION 10 – STABILITY AND REACTIVITY

Stability:	Stable
Incompatibility:	Portland cement concrete is alkaline and therefore incompatible with acids, ammonium salts and aluminium metal.
Hazardous Decomposition:	NA
Hazardous Polymerization:	NA

SECTION 11 – TOXILOGICAL INFORMATION

For questions regarding toxicological information refer to the contact information provided (Section 1).

Irritancy:	Wet concrete mixtures can dry the skin, cause alkali burns, and irritate the eyes and upper respiratory tract. Ingestion can cause irritation of the mouth, throat, stomach, and digestive tract.
Sensitization:	Sawing or other demolition techniques may create exposure to hazardous dust ingredients.
Carcinogenicity:	Concrete is not listed as a carcinogen by NTP, OSHA or IARC. It may, however, contain trace amounts of substances listed as carcinogens by those organizations.
Reproductive Toxicity:	NA
Taratogenicity:	NA
Mutagenicity:	NA
Effects of Acute Exposure:	(Section 3)
Effects of Chronic Exposure:	(Section 3)

SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity:	No recognized unusual toxicity to plants or animals.

SECTION 13 – DISPOSAL CONSIDERATIONS

Dispose of waste concrete in a designated area or landfill in compliance with local, provincial and federal regulations.

SECTION 14 – TRANSPORT INFORMATION

Concrete is not hazardous under Canadian TDG regulations.

SECTION 15 – REGULATORY INFORMATION

USDOL/OSHA Status:	Concrete is considered a “hazardous chemical” under this regulation and should be part of any hazard communication program.
CERCLA/Superfund Status:	Not listed
SARA (Title III) Category:	Concrete is considered a hazardous chemical and a delayed health hazard under Sections 311 and 312. Concrete is not subject to reporting requirements under Section 313.
TSCA Status:	Portland cement and quartz are exempt from reporting under the inventory update rule.
Federal Hazardous Substances Act Status:	Concrete is considered a “hazardous chemical” subject to statutes promulgated under the subject act.
California Proposition 65 Status:	Concrete contains chemicals (trace metals) known to the State of California to cause cancer, birth defects or other reproductive harm.
Canadian EPA Status:	Not listed
WHIMIS Status:	WHIMIS classification D2A, E. Concrete is considered to be a hazardous material under the Hazardous Products Act as defined by the CPR. This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all of the information required by those regulations.

SECTION 16 – OTHER INFORMATION

ANSI	American National Standards Institute	MSDS	Material Safety Data Sheet
CSA	Canadian Standards Association	NIOSH	National Institute for Occupational Safety and Health
TDG	Canadian Transportation of Dangerous Goods	OSHA	Occupational Safety and Health Administration
WHMIS	Canadian Workplace Hazardous Materials Information System	O.Reg	Ontario Regulation
CAS	Chemical Abstracts Service	PPE	Personal Protective Equipment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	(R)	Respirable Dust
CPR	Controlled Products Regulation	SARA	Superfund Amendments and Reauthorization Act
EPA	Environmental Protection Act	(T)	Total Dust
LC50	Lethal Concentration	TSCA	Toxic Substances Control Act
LD50	Lethal Dose	USDOL	United States Department of Labor

Table 3: Abbreviations

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