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**June 27, 2014**

Environmental Approvals Branch  
Manitoba Conservation and Water Stewardship  
Suite 160, 123 Main Street  
Winnipeg, Manitoba R3C 1A5

Attention: Director

**Re: Environment Act Proposal  
Concrete Products Batch Plant - Sundance, Makeso Concrete Inc.**

Attached is our submittal for registration with your department of Ready Mixed Concrete Plant – Makeso Concrete Inc. - located in Sundance, District of Gillam, Manitoba.

Best Regards,

Georg Nickel, P. Eng.

Director  
Makeso Concrete Inc.

---

Makeso Concrete Inc.

PO Box 857, Thompson, MB CANADA R8N 1N6 • Tel: 204-679-4084



Makeso Concrete Inc.  
PO Box 857, Thompson, MB CANADA R8N 1N6 • Tel: 204-679-4084  
[www.makesoconcrete.com](http://www.makesoconcrete.com)

# **Environmental Act Proposal (EAP)**

## **Concrete Products Batch Plant**

**City of Sundance, Fox Lake Cree Nation**


**June 27, 2014**

## Content

1. EAP Form
2. Operations Report – Makeso Plant (Appendix A)
3. Registry Detail (Appendix B)
4. Site Map and Plant layout (Appendix C)
5. Health, Safety and Environmental procedures (Appendix D)
6. Material Safety Data Sheets & Technical Data Sheets (Appendix E)
7. Recommended Guideline for Environmental Practices for Canadian Ready Mixed Concrete Industry, Canadian Ready-Mixed Concrete Association (Appendix F)
8. Preventative Maintenance – Condition Inspection Plan (Appendix G)

Environment Act Proposal Form



Name of the development: Makeso Plant, Makeso Concrete Inc.	
Type of development per Classes of Development Regulation (Manitoba Regulation 164/88): Class 1 - Manufacturing - Concrete Products Batch Plant	
Legal name of the applicant: Makeso Concrete Inc.	
Mailing address of the applicant: PO Box 857, Thompson, MB CANADA R8N 1N6	
Contact Person: Rick Stuart	
City: Thompson	Province: Manitoba      Postal Code: R8N 1N6
Phone Number: 204-679-4048	Fax:      email:
Location of the development: Sundance, MB	
Contact Person: Rick Stuart	
Street Address: Park Blvd ( between Park Blvd, Dot Rd & Riverside Dr), Sundance, MB	
Legal Description: Makeso Concrete Inc.	
City/Town: Sundance	Province: Manitoba      Postal Code: R8N 1N6
Phone Number: 204-679-4084	Fax:      email:
Name of proponent contact person for purposes of the environmental assessment: Georg Nickel	
Phone: (204) 262 5902 Fax: (204) 262 5909	Mailing address: 360-Hervo Street, Winnipeg, MB R3T 3L6
Email address: gnickel@multicretesystems.com	
Webpage address:	
Date: June 27, 2014	Signature of proponent, or corporate principal of corporate proponent: 
	Printed name: Georg Nickel

A complete **Environment Act Proposal (EAP)** consists of the following components:

- **Cover letter**
- **Environment Act Proposal Form**
- **Reports/plans supporting the EAP** (see "Information Bulletin - Environment Act Proposal Report Guidelines" for required information and number of copies)
- **Application fee** (Cheque, payable to Minister of Finance, for the appropriate fee)

Per Environment Act Fees Regulation (Manitoba Regulation 168/96):	
Class 1 Developments .....	\$1,000
Class 2 Developments .....	\$7,500
Class 3 Developments:	
Transportation and Transmission Lines ..	\$10,000
Water Developments .....	\$60,000
Energy and Mining.....	\$120,000

**Submit the complete EAP to:**

Director  
Environmental Approvals Branch  
Manitoba Conservation and Water Stewardship  
Suite 160, 123 Main Street  
Winnipeg, Manitoba R3C 1A5

**For more information:**

Phone: (204) 945-8321

Fax: (204) 945-5229

<http://www.gov.mb.ca/conservation/eal>

Appendix A

**Operations Report – Makeso Plant**



Makeso Concrete Inc.  
PO Box 857, Thompson, MB CANADA R8N 1N6 • Tel: 204-679-4084  
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## Appendix A

# Operations Report - Makeso Plant

City of Sundance, Fox Lake Cree Nation

June 27, 2014

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## **Executive Summary**

Makeso Concrete Inc. (MCI) operates a concrete products batch plant at Sundance, District of Gillam, Manitoba.

The plant has a daily processing capacity of approximately 50 metric tons of crushed aggregate, and produces between 40 and 60 metric tons of shotcrete and ready mix concrete.

The operation of the plant requires an Environmental Licence as the activities of batching are in Class 1 Development.

The report highlights the process of the MCI concrete products batch plant and its impact on immediate environment.

In terms of impact to the environment, the main concerns are related to soil pollution, groundwater pollution, surface water pollution, air pollution, noise pollution, human health, and habitat destruction.

Mitigation measures are in place since the plant has been put in operation to reduce the environment degradation and avoid the spread of contaminants into the environment.

The Environment Act Proposal concludes that the plant operates within acceptable environment limits.

Therefore, for its plant at Sundance, Makeso Concrete Inc. applies for the Environment Act Licence to the Manitoba Conservation and Water Stewardship by submitting an Environment Act Proposal.

### **1. Introduction and Background**

MCI Plant is a permanent ready mix concrete plant that is in the process of being certified by Manitoba Ready Mix Concrete Association.

The plant combines sand, aggregate (rocks and gravel), fly ash, cement, admixtures and/or water to form concrete. The pre-mix concrete produced is either wet or dry depending on the clients' requirements.

For the wet mix concrete, the product will be put into mixer trucks for delivery to various locations within 100 km of the plant location. Therefore, the dry mix concrete is delivered as it is and mixed with water only on client's site.

The facility utilizes the following equipment and accessories in the batching process:

- Cement silos
- Aggregate bins
- Conveyors
- Control panel equipped with controls, scales, and electronic water meter
- Dust collectors
- Air compressor

## **2. Description of the Plant**

### **2.1. Owner of Land**

The registered owner is MAKESO LAND CORPORATION (please refer to Appendix B).

### **2.2. Certificate of Title & Land surveys**

The Registry Detail is exposed in Appendix B.

### **2.3. Site Map and Plant Layout**

Please refer to Appendix C for the detail of the plant layout.

### **2.4. Batching Operation**

Prior to commencement of batching, a ready mix truck is positioned under the loading chute.

For each batch, the requisite batch ingredients (cementitious, water, aggregates and admixtures) are weighed or metered in a given sequence controlled by the batch plant computer. Cementitious is discharged by auger and gravity in a controlled manner from the silos; sand and coarse aggregates are discharged from the weigh-bins along a conveyor. Water and admixtures are added to the truck load by volume metering.

Dust emitting from the truck area is controlled via fine tuning of the batching sequence to deliver a smooth, controlled flow of raw material into the mixer with a combination of water addition to control dust emissions.

Once all materials are in the truck's mixing drum, the revolution speed of the drum is increased to mixing speed for travel on roads to the project site.

## **3. Description of Existing Environment in the Plant Area**

### **3.1. Biophysical environment**

#### **3.1.1. Terrain features**

The facility is located in Sundance within the District of Gillam, where there are neither hills nor valleys in its surroundings. Lakes, rivers and wetlands are far from the facility. Nelson River is the nearest water body, which is 0.5 km from the plant.

The potable water treatment plant of Sundance City is situated at about 750 meters from MCI plant.

#### **3.1.2. Climate**

The prevailing climate and meteorological conditions of Gillam District are marked by a subarctic climate, with long, bitterly cold winters, and short but warm summers. Monthly mean temperatures range goes from minus 30.5 °C in January to plus 21.4 °C in July.

Though a majority of the annual precipitation of 499.4 millimeters falls from June to September, winter is by no means devoid of precipitation. Snow falls mainly from October to May, with generally small accumulation in June and September.

Source: [http://en.wikipedia.org/wiki/Gillam,\\_Manitoba](http://en.wikipedia.org/wiki/Gillam,_Manitoba);  
[http://en.wikipedia.org/wiki/Thompson,\\_Manitoba](http://en.wikipedia.org/wiki/Thompson,_Manitoba)

### **3.1.3. Aquatic environment**

Regarding the aquatic environment, there is no water-body in the immediate surroundings of the plant area that could be affected by the facility operations.

### **3.1.4. Terrestrial environment**

The nearby plant zone is characterized by sparse trees and vegetation. However, in the surroundings of the facility, there is no presence of any rare, threatened or endangered species or any important or sensitive species and/or habitats.

## **3.2. Socioeconomic environment**

### **3.2.1. Public safety risk**

There is no public safety risk related to plant operations.

### **3.2.2. Protected areas**

There are no national and provincial protected parks in immediate area.

### **3.2.3. Heritage resources**

There is no heritage museum in the surroundings of the facility.

## **4. Description of Environment and Human Health Effects of the Plant**

### **4.1. Batching materials**

#### **4.1.1. Aggregates**

Aggregates typically consisting of a single sand (5mm down) and a single gravel or crushed stone (10 mm to 20 mm max) are delivered to the yard by dump trailer trucks.

The aggregates are stored in stockpile areas and storage bins at the plant. The amount on site at any one time will vary with the needs of the market.

#### **4.1.2. Cementitious materials**

Portland cements of various types and fly ash are stored in silos by bulk tanker trucks.

Each truck is equipped with an air blower system which enables it to blow the cement or fly ash into the appropriate silo.

#### **4.1.3. Admixtures**

In order to impart particular properties to the concrete mixture, admixtures are used in the batching process. The mentioned admixtures are supplied by a tanker truck of Sika Canada as bulk liquids and stored on site.

Small plastic containers proved by SIKA are used for specialty mixes.

#### **4.1.4. Water supply**

The potable water used for production is drawn from the City of Sundance. The water is used for the following purposes:

- Mixing water with batching concrete load into the ready mix truck
- Producing steam
- Filling truck-mounted water tank
- Dust suppression in the plant yard in high traffic areas

#### **4.2. Potential impacts of the plant on the environment**

##### **4.2.1. Impact on biophysical environment**

No impact of actual plant operations on wildlife, fisheries, surface water, groundwater, and forestry resources.

##### **4.2.2. Pollutants**

Major emissions come from dust particle emissions.

In addition, the operation can generate wastes in the form of excess concrete being brought back to the concrete batching plant within agitator trucks. In such case, all of this excess concrete is used to build precast concrete blocks used for several commercial purposes.

##### **4.2.3. Hazardous wastes**

Any hazardous waste is disposed of at the Landfill site of the City of Sundance according to their guidelines.

##### **4.2.4. Storage of gasoline and associated products**

There is no storage of gasoline and associated products on site. However, the gasoline and associated products essential for the process are directly supplied by VALARD.

##### **4.2.5. Impact on heritage resources**

There is none.

##### **4.2.6. Socioeconomic implications**

There are no socioeconomic implications resulting from environmental impact.

#### **4.3. Potential impacts of the plant on Human health and safety**

There is no potential impact on human health and safety resulting from any release of pollutants from the plant.

## **5. Mitigation measures and Residual Environment Effects**

### **5.1. Mitigation of dust emissions**

#### **5.1.1. Dust collection systems**

The plant is equipped with dust collection systems, mounted on top of cement silos, which have filter bags used to control dust emissions from cements. These emissions occur when cements are loaded into silos.

Dust collectors are inspected and cleaned on a monthly basis, and the fines are put back into the process.

The use of dust collection system mitigates any potential impacts of dust as air pollutant on the environment.

#### **5.1.2. Smooth flow**

Dust emitting from the truck area is controlled via fine tuning of the batching sequence to deliver a smooth and controlled flow of raw material into the mixer with a combination of water addition to control dust emissions.

#### **5.1.3. Use of water**

As said above, the water is used to mitigate dust impacts in the high traffic areas of the plant yard.

### **5.2. Recycling returned concrete**

Where operational and quality control restraints allow, any excess returned concrete is used to build precast.

A wash bay is used in the facility with objective to recycle the sediments that are washed from the ready mix trucks. (Please see the wash bay location in Appendix C).

### **5.3. Spillage response**

In case of spillage, the plant responds according to the company spill response plan described in the spill containment procedure. Some Health, Safety and Environment (HSE) procedures related to handling diesel fuel and indoor storage/usage of flammable liquids are attached to this report as a reference (Please see Appendix D).

### **5.4. Material Safety Data Sheet (MSDS)**

Each raw materials supplier provides an up-to-date MSDS documentation for the raw materials that are delivered and used in mixed concrete.

The plant has also its own MSDS documentation for each type of mixed concrete produced and delivered.

MSDS sheets and some Technical Data sheets are attached (see Appendix E) for the following chemicals:

- Plastocrete 161 HE: Water-reducer / retarder meeting ASTM C494/C494M. The product is an aqueous solution of lignosulfonate, amine, and compound carbohydrates.

- Sika AER: Air entraining agent meeting ASTM C949 C494M. The product is an aqueous solution of neutralized resin acids and rosin acids.
- Portland cement.

## **6. Follow-up, Monitoring & Reporting**

### **6.1. Environmental guidelines**

To ensure all environmental concerns, and precautions have been addressed and met, the MCI Plant follows the *Recommended Guideline for Environmental Practices for Canadian Ready Mixed Concrete Industry, Canadian Ready-Mixed Concrete Association (CRMCA), Mississauga - Ontario, May 2004* (CRMCA copy in Appendix F).

### **6.2. Preventive Maintenance Plan**

Continual improvement of MCI performance is one of the permanent objectives. To achieve this goal, MCI has set in place a preventive maintenance program of its equipment. The program is performed through weekly checks that allow flexibility to react quickly to defect opportunities. Please find the plant maintenance checklist named “*PM-Condition Inspection*” in Appendix G.

## **7. Conclusions**

The EAP is completed in accordance with Manitoba Conservation’s Advice for a Class 1 Development. The report has highlighted the process of the Makeso Concrete Inc. concrete products batch plant and its impact on immediate environment.

It has been demonstrated through this report that MCI Plant operates with respect to its surrounding environment.

Therefore, specific equipment and processes are used since the facility exists to mitigate any environment issue from the plant operations.

To sum up, the report shows that the plant operates within acceptable environment limits.

## Appendix C

### **Site Map and Plant layout**



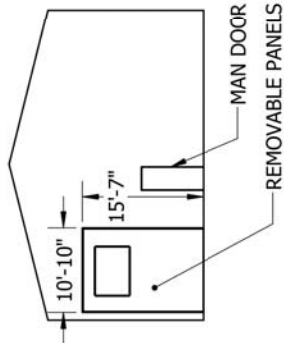
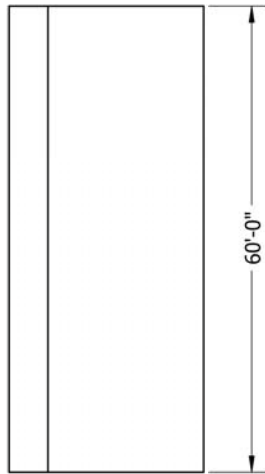
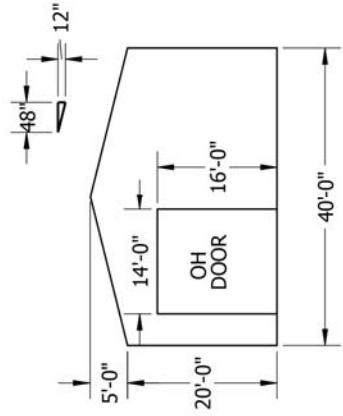
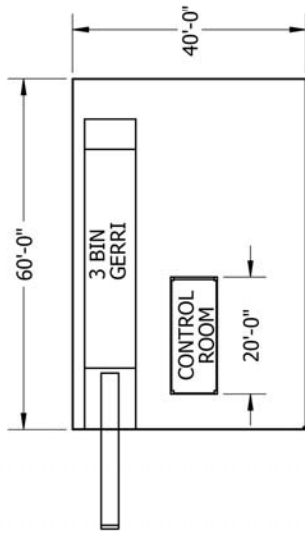
FOR DISCUSSION ONLY

- IS THIS THE CORRECT LOCATION OF THE GERRI AND CONTROL ROOM?
- WHERE SHOULD WATER VAN BE LOCATED?
- WHERE SHOULD CLEANOUT PIT BE LOCATED?

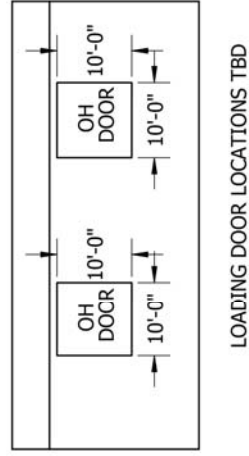
SUNDANCE REDIMIX PLANT

DRAWN		NAME	DATE
DESIGN APPR.		D.G.	6/25/2014
MULTICRETE SYSTEMS INC. UNIT 360-555 HERVO STREET WINNIPEG MANITOBA CANADA R2G 2G5 TEL: 204-263-6909 F: 204-263-6909		SIZE DWG. NO.	REV
		<b>B</b>	<b>MS S12331A-02</b>
<small>PROFESSIONAL AND CONFIDENTIAL DRAWING &amp; THE SOLE PROPERTY OF MULTICRETE SYSTEMS INC. ANY REUSE OR REPRODUCTION OF THIS DRAWING WITHOUT THE WRITTEN PERMISSION OF MULTICRETE SYSTEMS INC. IS PROHIBITED.</small>		SCALE: DO NOT SCALE SHEET 1 OF 2	





SIZE AND LOCATION OF REMOVABLE PANELS TBD



LOADING DOOR LOCATIONS TBD

DRAWING TITLE:

SUNDANCE REDIMIX PLANT

SHEET TITLE		NAME	DATE
40 X 60 BUILDING		D.G.	6/26/2014
DRAWN		DESIGN APPR.	


**MAKESO**  
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 FAX: 204 262-5909

DWG. NO. **BMS12331A-02**  
 REV

SCALE: DO NOT SCALE  
 SHEET 2 OF 2

## Appendix D

**Health, Safety and Environmental procedures HSE procedures**



**HEALTH, SAFETY AND ENVIRONMENTAL COMPANY STATEMENT**

Makeso is committed to a strong Health Safety and Environmental Program that protects its Employees, Subcontractors, Customers or clients, the Public and Property from accidents and /or incidents.

Makeso believes that all accidents are preventable. Our Goal is **ZERO** accidents. Active participation at all levels will ensure that our goal can be achieved.

Makeso endeavours to provide proper and relevant employee training, job specific safe work practices, project and personal protection equipment, operation and maintenance procedures, and safety guidelines that focus Management, Employee and Subcontractors awareness on reducing the risk of accidents and/or incidents in all activities.

Makeso and Subcontractor Employees are responsible for fully complying with all Health and Safety Standards and Regulations, and for co-operating with Management in the implementation of the Health, Safety & Environmental Program, worksite inspections, incident/accident investigations and in the continuous improvement of this program.

Makeso is committed to protecting the environment in all aspects of our operations.

Makeso Management, Subcontractor Management and all Employees are collectively responsible to ensure compliance with Local Government, Occupational Health, Safety and Environmental Regulations.

Signed: 

Reviewed: \_\_\_\_\_

*Georg Nickel*  
*President & CEO*



# Spill Containment

PROCEDURE	
Serial N°	SPI-SJP-01

Facility:	Written By:	Approved By:	Date Created	Date of Last Revision:
Corporate	DJB	DJB	Dec. 1 2012	Jan. 5 2014

Hazards Present:	PPE or Devices Required:	Additional Training Required:
Chemical Inhalation Serious injury Chemical Burns	Steel toed boots Eye protection Hand protection Respirator Chemical Resistant suit Spill Kit	Spill Containment Training WHMIS

<p><b>Safe Job Procedure:</b></p> <ol style="list-style-type: none"> <li>1 Stop the spill at the source if possible</li> <li>2 Cover drains and other escape routes if possible</li> <li>3 Using patch kit, valve plug, or whatever is needed to patch the hole(s)</li> <li>4 Contain the spill using the best method               <ol style="list-style-type: none"> <li>A. Build Dyke</li> <li>B. Replace or repair leak proof container</li> <li>C. Channel spill to a contained area or container</li> <li>D. Place an empty container under the leak</li> <li>E. Shift or rotate the leaking container to stop the leak</li> </ol> </li> <li>5 Using absorbent materials (soaker pads) to soak up the spill or solidify it</li> <li>6 Push absorbent liquid mixture into approved container for proper disposal</li> <li>7 Decontaminate any tools etc that came into contact with the spill (clothing, brooms, shovels)</li> <li>8 Report and record the spill</li> </ol>
--

***If an emergency situation occurs while conducting this task, or there is an equipment malfunction, engage the emergency stop and follow the lock out procedure***

**REPORT ANY HAZARDOUS SITUATIONS TO YOUR SUPERVISOR**

<b>Guidance Documents/Standards:</b>  MB Workplace Safety & Health Act & Regulations: 2.1 Safe Work Procedures 4 General Workplace Requirements 6 Personal Protective Equipment 35 Workplace Hazardous Materials Information System 36 Chemical and Biological Substances	This Safe Work Procedure will be reviewed any time the task, equipment or materials change and at a minimum of every three years
	Reviewed By Worker Rep/WSH Committee:  Date:



# Handling Diesel Fuel

## PROCEDURE

Serial N° HDF-SJP-01

Facility:	Written By:	Approved By:	Date Created	Date of Last Revision:
Corporate	DJB	DJB	Dec. 1 2012	Jan. 5 2013

<b>Hazards Present:</b>	<b>PPE or Devices Required:</b>	<b>Additional Training Required:</b>
Toxic vapors Flammable	Gloves Breathing apparatus Steel toed boots	Fire Extinguisher Training WHMIS First Aid

### Safe Job Procedure:

- 1 Fill tanks in well vented area outside
- 2 Store all decanted diesel outdoors
- 3 Label all decanted containers as per WHMIS
- 4 Extinguish all flames, sparks and cigarettes while using it
- 5 Turn off engine before filling equipment or slip tanks
- 6 Use genuine spill proof gas containers if necessary to transport fuel to a site
- 7 Wash hands thoroughly after handling
- 8 Avoid inhaling fumes
- 9 Clean up spills immediately using a spill kit
- 10 Berm around bulk storage facilities

***If an emergency situation occurs while conducting this task, or there is an equipment malfunction, engage the emergency stop and follow the lock out procedure***

### REPORT ANY HAZARDOUS SITUATIONS TO YOUR SUPERVISOR

<b>Guidance Documents/Standards:</b>  MB Workplace Safety & Health Act & Regulations: 4 General Workplace Requirements 5 First Aid 6 Personal Protective Equipment 35 W.H.M.I.S - Requirement, Labelling, MSDS 36 Chemical & Biological Substances	This Safe Work Procedure will be reviewed any time the task, equipment or materials change and at a minimum of every three years
	Reviewed By Worker Rep/WSH Committee:  Date:



# Indoor Storage/Usage of Flammable Liquids

<b>PROCEDURE</b>	
Serial N°	IFL-SJP-01

Facility:	Written By:	Approved By:	Date Created	Date of Last Revision:
Corporate	DJB	DJB	Dec. 1 2012	Jan. 5 2013

Hazards Present:	PPE or Devices Required:	Additional Training Required:
Potential fire Inhalation of chemicals / toxins Burns	Steel toed boots Eye protection Hand protection	Fire Extinguisher Training WHMIS

Safe Job Procedure:
<ol style="list-style-type: none"> <li>1 Safety containers shall be used at all times and provide content identification and hazard warnings</li> <li>2 Flammable liquids are to be stored in a steel locker</li> <li>3 Water reactive materials are prohibited in flammable liquid storage rooms</li> <li>4 Warning signs alerting emergency personnel to the presence of flammable liquids must be posted at all entrances and storage areas</li> <li>5 Supervisors are to inspect storage rooms quarterly to ensure compliance</li> <li>6 Smoking, open flames, arcs, and spark-producing equipment are prohibited in the area</li> <li>7 Ventilation shall be provided in sufficient quantities to keep the concentration of vapors below 10% of their lower explosive limit.</li> <li>8 Frequent tests shall be made by a competent person to ascertain the concentration</li> <li>9 Scraping and rags soaked with flammable materials shall be kept in a covered metal container</li> <li>10 Suitable fire extinguishing equipment shall be immediately available in the work area and shall be maintained in a state of readiness for instant use</li> <li>11 No more than three storage cabinets of flammable liquids shall be in a single workplace</li> </ol>

***If an emergency situation occurs while conducting this task, or there is an equipment malfunction, engage the emergency stop and follow the lock out procedure***

**REPORT ANY HAZARDOUS SITUATIONS TO YOUR SUPERVISOR**

<b>Guidance Documents/Standards:</b>  MB Workplace Safety & Health Act & Regulations: 6 Personal Protective Equipment 19 Fire and Explosive Hazards 35 Workplace Hazardous Materials Information Systems  Safe Work Bulletin #178	This Safe Work Procedure will be reviewed any time the task, equipment or materials change and at a minimum of every three years  Reviewed By Worker Rep/WSH Committee:  Date:
---	--

Appendix E

**Material Safety Data Sheets & Technical Data Sheets**



# MATERIAL SAFETY DATA SHEET

Material: Portland Cement

Approved by **W. Galloway** Senior Vice President Date of revision **01. January 2011** Page 1 of 5

Control Number: XA.11.101

## Section I - Identification

<b>Supplier Name:</b> Holcim (Canada) Inc.	<b>Emergency Information</b>
<b>Address:</b> 2300 Steeles Ave. W. 4 <sup>th</sup> floor Concord, Ontario, L4K 5X6	<b>Contact: (CANUTEC)</b> <b>Telephone: (613) 996-6666</b>
<b>Telephone:</b> 905-761-7100	<b>Note: The CANUTEC number is to be used only in the event of chemical emergencies involving a spill, fire, exposure or accident involving chemicals.</b>
<b>WHMIS Classification:</b> D2A, E	<b>Material Uses:</b> The Portland cement is the binding ingredient in most concrete mixes. Concrete is widely used as a building material for structures and pavements.
<b>Product Codes:</b> Portland Cement: CSA A 3000 Type GU, MS, MH, HE, LH, HS. ASTM C 150 Type I, II, III, IV, V. Portland White Cement. This MSDS covers many products. Individual constituents will vary.	<b>Formula:</b> This product consists of finely ground Portland cement clinker mixed with a small amount of calcium sulfate (gypsum).
<b>Chemical Family:</b> Calcium compounds. Calcium silicate components and other calcium compounds containing iron and aluminum make up the majority of this product.	<b>Chemical Name and Synonyms:</b> Portland cement. Portland cement is also known as hydraulic cement.

## Section II - Components

### Hazardous Ingredients

Component	CAS #	% by Weight	OSHA PEL (mg/m <sup>3</sup> )	ACGIH TLV-TWA (mg/m <sup>3</sup> )
Portland Cement	65997-15-1	100	15 (T) ; 5 (R)	1 (R) (E)
Calcium Sulphate	7778-18-9	3 – 7	15 (T) ; 5 (R)	10 (I)
Calcium Oxide	1305-78-8	0 – 2	5	2
Calcium Carbonate	1317-65-3	0 – 5	15 (T) ; 5 (R)	TLV <sup>®</sup> withdrawn
Crystalline Silica	14808-60-7	< 0.2	[(10) / (% SiO <sub>2</sub> + 2)] (R) [(30) / (% SiO <sub>2</sub> + 2)] (T)	0.025 (R)

(T) = Total Dust ; (I) = Inhalable Fraction; (R) = Respirable Fraction; (E) = Particulate matter containing no asbestos and < 1% crystalline silica

**Trace constituents:** Portland Cement has a variable composition depending upon the cementitious products produced in the cement kiln. Small amounts of naturally occurring, but potentially harmful, chemical compounds might be detected during chemical analysis. These trace compounds might include free crystalline silica, potassium and sodium compounds; heavy metals including cadmium, chromium, nickel and lead; and organic compounds. Other trace constituents may include calcium oxide (also known as free lime or quick lime) .

## Section III – Hazards Identification

### Emergency Overview

Portland cement is a light gray powder that poses little immediate hazard. A single short-term exposure to the dry powder is not likely to cause serious harm. However, exposure to wet portland cement can cause serious, potentially irreversible tissue (skin or eye) destruction in the form of chemical (caustic) burns or an allergic reaction. The same type of tissue destruction can occur if wet or moist areas of the body are exposed for sufficient duration to dry portland cement.

### Potential Health Effects

- **Relevant Routes of Exposure:** Eye contact, skin contact, inhalation, and ingestion
- **Effects resulting from eye contact:** Exposure to airborne dust may cause immediate or delayed irritation or inflammation. Eye contact with larger amounts of dry powder or splashes of wet Portland cement may cause effects ranging from moderate eye irritation to chemical burns and blindness. Such exposures require immediate first aid (see section IV) and medical attention to prevent





# MATERIAL SAFETY DATA SHEET

Material: Portland Cement

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significant damage to the eye.

- *Effects resulting from skin contact:* Discomfort or pain cannot be relied upon to alert a person to a hazardous skin exposure. Consequently, the only effective means of avoiding skin injury or illness involves minimizing skin contact, particularly contact with wet cement. Exposed persons may not feel discomfort until hours after the exposure has ended and significant injury has occurred. Exposure to dry Portland cement may cause drying of the skin with consequent mild irritation or more significant effects attributable to aggravation of other conditions. Dry portland cement contacting wet skin or exposure to moist or wet portland cement may cause more severe skin effects including thickening, cracking or fissuring of the skin. Prolonged exposure can cause severe skin damage in the form of (caustic) chemical burns. Some individuals may exhibit an allergic response (e.g., allergic contact dermatitis) upon exposure to portland cement, possibly due to trace amounts of chromium. The response may appear in a variety of forms ranging from a mild rash to severe skin ulcers. Persons already sensitized may react to the first contact with the product. Other persons may experience this effect after years of contact with portland cement products.
- *Effects resulting from inhalation:* Portland cement contains small amounts of free crystalline silica. Prolonged exposure to respirable free crystalline silica can aggravate other lung conditions and cause silicosis, a disabling and potentially fatal lung disease and/or other diseases. Risk of injury or disease depends on duration and degree of exposure. (Also see "Carcinogenic potential" below.) Exposure to Portland cement may cause irritation to the moist mucous membranes of the nose, throat, and upper respiratory system. It may also leave unpleasant deposits in the nose.
- *Effects resulting from ingestion:* Although small quantities of dust are not known to be harmful, ill effects are possible if larger quantities are consumed. Portland cement should not be eaten.
- *Carcinogenic potential:* NTP, OSHA, or IARC has not listed Portland cement as a carcinogen. It may, however, contain trace amounts of substances listed as carcinogens by these organizations. Crystalline silica, which is present in Portland cement in small amounts, has been listed by IARC and NTP as a known human carcinogen (Group I) through inhalation. Hexavalent chromium is listed by IARC, EPA, NTP and OSHA as Group I known carcinogen by inhalation.
- *Medical conditions which may be aggravated by inhalation or dermal exposure:*
  - Pre-existing upper respiratory and lung diseases
  - Unusual (hyper) sensitivity to hexavalent chromium (chromium+6) salts.

## Section IV – First Aid

**Eyes:** Immediately flush eyes thoroughly with water. Continue flushing eye for at least 15 minutes, including under lids, to remove all particles. Call physician immediately.

**Skin:** Wash skin with cool water and pH-neutral soap or a mild detergent. Seek medical treatment in all cases of prolonged exposure to wet cement, wet cement mixtures, wet concrete liquids from fresh cement products, or prolonged wet skin exposure to dry cement.

**Inhalation of Airborne Dust:** Remove to fresh air. Seek medical help if coughing or other symptoms do not subside. (Inhalation of gross amounts of portland cement requires immediate medical attention.)

**Ingestion:** Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately.

## Section V – Fire & Explosion Data

Flash Point:	<i>Not Combustible</i>	Auto Ignition Temperature:	<i>Not Combustible</i>
Lower Explosive Limit:	<i>None</i>	Upper Explosive Limit:	<i>None</i>
Extinguishing Media:	<i>Not Combustible</i>	Unusual Fire and Explosion Hazards:	<i>None</i>
Hazardous Combustion Products:	<i>None</i>		
Special Fire Fighting Procedures:	<i>None.</i> (Although portland cement poses no fire-related hazards, a self-contained breathing apparatus is recommended to limit exposure to combustion products when fighting any fire.)		

## Section VI – Accidental Release Measures

Collect dry material using a scoop. Avoid actions that cause dust to become airborne. Avoid inhalation of dust and contact with skin.

Wear appropriate personal protective equipment as described in Section VIII.

Scrape up wet material and place in an appropriate container. Allow the material to "dry" before disposal. Do not attempt to wash Portland cement down drains.

Dispose of waste material according to local, state, and federal regulations.

## Section VII – Handling & Storage

Keep portland cement dry until used. Normal temperatures and pressures do not affect the material. Promptly remove dusty clothing or clothing which is wet with cement fluids and launder before reuse. Wash thoroughly after exposure to dust or wet cement mixtures or fluids.



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## Section VIII – Exposure Control/Personal Protection

**Skin Protection:** Prevention is essential to avoiding potentially severe skin injury. Avoid contact with unhardened wet portland cement products. If contact occurs, promptly wash affected area with soap and water. Where prolonged exposure to unhardened portland cement products might occur, wear impervious clothing and gloves to prevent skin contact. Where required, wear sturdy boots that are impervious to water to eliminate foot and ankle exposure. Do not rely on barrier creams; barrier creams should not be used in place of impervious gloves and clothing. Periodically wash areas contacted by dry portland cement or wet cement or concrete with a pH neutral soap. Wash again at the end of the work. If irritation occurs, immediately wash the affected area and seek treatment. If clothing becomes saturated with wet concrete, it should be removed and replaced with clean, dry clothing.

**Respiratory protection:** Avoid actions that cause dust to become airborne. Use local or general ventilation to control exposures below applicable exposure limits. Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998, must be certified under 42 CFR 84.)

**Ventilation:** Use local exhaust or general dilution ventilation to control exposure within applicable limits.

**Eye Protection:** In conditions where user may be exposed to splashes or puffs of cement, wear safety glasses with side shields or goggles. In extremely dusty or unpredictable environments, wear unvented or indirectly vented goggles to avoid eye irritation or injury. Contact lenses should not be worn when working with portland cement or fresh cement products.

## Section IX – Physical & Chemical Properties

Appearance:	<i>Grey or White Powder</i>	Vapor Pressure:	<i>Not Applicable</i>
Odor:	<i>No Distinct Odor</i>	Vapor Density:	<i>Not Applicable</i>
Physical State:	<i>Solid (Powder)</i>	Boiling Point:	<i>Not Applicable</i>
pH (in water):	<i>12 - 13</i>	Melting Point:	<i>Not Applicable (i.e. &gt;1000 °C)</i>
Solubility in Water:	<i>Slightly Soluble (0.1 to 1.0%)</i>	Specific Gravity (H <sub>2</sub> O = 1)	<i>3.15</i>
Evaporation Rate:	<i>Not Applicable</i>		

## Section X – Stability & Reactivity

Stability:	<i>Stable</i>
Incompatibility:	<i>Wet portland cement is alkaline. As such it is incompatible with acids, ammonium salts, and aluminum metal.</i>
Conditions to Avoid:	<i>Unintentional contact with water.</i>
Hazardous Decomposition:	<i>Will not spontaneously occur. Adding water produces (caustic) calcium hydroxide as a result of hydration.</i>
Hazardous Polymerisation:	<i>Will not occur.</i>

## Section XI – Toxicological Information

For a description of available, more detailed toxicological information, contact Holcim (Canada) Inc. (Contact Details in Section I).

## Section XII – Ecological Information

Ecotoxicity:	<i>No recognized unusual toxicity to plants or animals</i>
Relevant Physical & Chemical Properties:	<i>See Sections IX &amp; X</i>

## Section XIII – Disposal

Dispose of waste material according to local, state, and federal regulations. (Since portland cement is stable, uncontaminated material may be saved for future use.) Dispose of bags in an approved landfill or incinerator.

## Section XIV – Transportation Data



# MATERIAL SAFETY DATA SHEET

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Hazardous Materials Description/Proper Shipping Name:	<i>Portland cement is not hazardous under U.S. Department of Transportation (DOT) regulations and Canadian Transportation of Dangerous Goods (TDG) Regulation</i>
Hazard class:	<i>Not applicable</i>
Identification class:	<i>Not applicable</i>
Required label text:	<i>Not applicable</i>
Hazardous substances/reportable quantities (RQ):	<i>Not applicable</i>

## Section XV – Other Regulatory Information

Status under USDOL-OSHA Hazard Communication Rule, 29 CFR 1910.1200:	<i>Portland cement is considered a hazardous chemical under this regulation, and should be part of any hazard communication program.</i>
Status under CERCLA/Superfund, 40 CFR 117 and 302:	<i>Not listed.</i>
Hazard Category under SARA (Title III), Sections 311 and 312:	<i>Portland cement qualifies as hazardous substance with delayed health effects under Sections 311 and 312.</i>
Status under SARA (Title III), Section 313:	<i>Not subject to reporting requirements under Section 313.</i>
Status under TSCA (as of May 1997):	<i>Some substances in Portland cement are on the TSCA inventory list.</i>
Status under the Federal Hazardous Substances Act:	<i>Portland cement is a hazardous substance subject to statutes promulgated under the subject act.</i>
Status under California Proposition 65:	<i>This product contains chemicals (trace metals) known to the State of California to cause cancer, birth defects or other reproductive harm. California law requires the manufacturer to give the above warning in the absence of definitive testing to prove that the defined risks do not exist.</i>
Status under Canadian Environmental Protection Act:	<i>Not listed.</i>
Status under Workplace Hazardous Materials Information System (WHMIS):	<i>Portland cement is considered to be a hazardous material under the Hazardous Products Act as defined by the Controlled Products Regulations (Class D2A – Chronic Toxic Effect and Class E – Corrosive Material) and is therefore subject to the labelling and MSDS requirements of WHMIS.</i>  <i>This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR</i>

## Section XVI – Other Information

Portland cement should only be used by knowledgeable persons. A key to using the product safely requires the user to recognize that Portland cement chemically reacts with water, and that some of the intermediate products of this reaction (that is, those present while a Portland cement product is setting) pose a far more severe hazard than does Portland cement itself.

While the information provided in this material safety data sheet is believed to provide a useful summary of the hazards of Portland cement as it is commonly used, this sheet cannot anticipate and provide all of the information that might be needed in every situation. Inexperienced product users should obtain proper training before using this product.

In particular, the data furnished in this sheet do not address hazards that may be posed by other materials mixed with Portland cement to produce Portland cement products. Users should review other relevant material safety data sheets before working with this Portland cement or working on Portland cement products, for example, Portland cement concrete.



# MATERIAL SAFETY DATA SHEET

Material: Portland Cement

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Control Number: XA.11.101

SELLER MAKES NO WARRANTY, EXPRESSED OR IMPLIED, CONCERNING THE PRODUCT OF THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY HOLCIM (CANADA), EXCEPT THAT THE PRODUCT SHALL CONFORM TO CONTRACTED SPECIFICATIONS.

The information provided herein was believed by Holcim (Canada) Inc. to be accurate at the time of preparation or prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information to comply with all laws and procedures applicable to the safe handling and use of product and to determine the suitability of the product for its intended use. Buyer's exclusive remedy shall be for damages and no claim of any kind, whether as for product delivered or for non-delivery of product, and whether based on contract, breach of warranty, negligence, or otherwise, shall be greater in amount than the purchase price of the quantity of product in respect of which damages are claimed. In no event shall Seller be liable for incidental or consequential damages, whether Buyer's claim is based on contract, breach of warranty, negligence or otherwise.



SECTION I: PRODUCT INFORMATION

PRODUCT: **Sika® AER<sup>CA</sup>** REVISION DATE: February 1<sup>st</sup>, 2012

USAGE: Air entraining admixture for exposed concrete

MANUFACTURER/SUPPLIER: SIKA CANADA INC.  
18131 – 114<sup>th</sup> Avenue N.W.  
Edmonton, AB  
T5S 1T8

**EMERGENCY TELEPHONE NUMBER: CANUTEC (collect) (613) 996-6666**

TDG CLASSIFICATION: Not Regulated WHMIS Classification: D2B  
UN NUMBER: Not Established Class: Not Established  
Packaging Group: Not Established

SECTION II: HAZARDOUS INGREDIENTS

Hazardous ingredients	%	T.L.V.	# CAS	LD <sub>50</sub> (mg/kg) (Species, route)	LC <sub>50</sub> (Species, route)
SODIUM HYDROXIDE	1-5	2 mg/m <sup>3</sup>	1310-73-2	500 (oral, rabbit)	Not available

SECTION III: PHYSICAL CHARACTERISTICS

Physical State: Liquid	Boiling Point: > 100°C
Appearance and Odor: Dark brown with wood resin odor	Freezing Point: < 0°C
Odor Threshold: Not Applicable	Density: 1.05 g/ml @ 23°C
Evaporation Rate: < 1 (Butyl Acetate = 1)	Water Solubility: Infinite
Vapor Density: Not Applicable	pH: 10 - 12
Vapor Pressure: 21.068 mm Hg @ 23°C	% volatility: Not Applicable
	Water/Oil Distribution: Not Applicable



PRODUCT: Sika® AER<sup>CA</sup>

SECTION IV: FIRE AND EXPLOSION HAZARDS

Flammability:	No	TDG Flammability Class:	Not Regulated
If Yes, under what conditions:		Flammable upper limits (% vol.):	Not Established
		Flammable lower limits (% vol.):	Not Established
		Flash Point (method used):	Not Established
		Auto-ignition temperature:	Not Established
Extinguishing methods:	Water spray (fog) foam, dry chemical or CO <sub>2</sub>	Dangerous Combustion Products:	Carbon oxides
		Protect from mechanical impact:	No
Special Methods:	Fire fighters should wear the usual protective gear and NIOSH approved self-contained breathing apparatus with a full face-piece operated in the pressure demand or other positive pressure mode.	Protect from static discharge:	No

SECTION V: REACTIVITY

Chemical stability:	Yes	Dangerous decomposition products:	Carbon oxides
If not, under what conditions:			
Incompatibility with other material:	Yes	Polymerization Risks:	Not Established
If Yes, which ones:	Aluminum metal, galvanized steel and salts containing multi-valent ions (e.g.: iron, aluminum, calcium).		



PRODUCT: Sika® AER<sup>CA</sup>

SECTION VI: TOXIC PROPERTIES

ROUTE OF ENTRY / CONTACT

Eyes: Irritating. Can cause inflammation and necrosis. (contact)

Skin: Mildly irritating and may cause drying of the skin. (contact)

Inhalation: Irritating. May cause upper respiratory irritation.

Ingestion: Moderate irritation of mouth and throat due to alkalinity. May cause diarrhea.

Carcinogenicity: Not Established

Toxic effects on reproduction: Not Established

Teratogenicity: Not Established

Mutagenicity: Not Established

Product with synergistic effects: Not Established

An acute or chronic exposure will increase the toxic effects mentioned in this section.



PRODUCT: Sika® AER<sup>CA</sup>

SECTION VII: PREVENTIVE MEASURES

PERSONAL PROTECTIVE EQUIPMENT

Gloves: Natural rubber, neoprene or polyethylene gloves.

Respirator: NIOSH approved mask, generally not needed with adequate ventilation. Necessary in areas of poor ventilation.

Eyes: Safety glasses. Under misty conditions, do not wear contact lenses.

Shoes: Ordinary.

Clothing: Rubber Apron.

Other: Eye wash fountain.

OTHERS

Ventilation: Sufficient ventilation required.

Procedure in case of leaks: Absorb with sand or other absorbent material. Residue may be removed with steam or hot water and soap.

Handling and Equipment methods: Avoid skin, eye and clothing contact. Maintain good personal hygiene.

Warehouse Requirements: Keep all containers closed in a cool, dry area. Protect from freezing.

Special Shipping Instructions: See TDG class

Waste Disposal: Dispose of sand and rinse water according to municipal, provincial or federal laws for disposal of chemicals.





PRODUCT: Sika® AER<sup>CA</sup>

SECTION VIII: FIRST AID

Skin: Remove and clean all contaminated clothing. Wash with plenty of soap and water, for at least 10 minutes. Use moisture creams on affected areas. Consult a physician if required.

Eyes: Rinse immediately with luke warm water, while holding eyelids open, for at least 20 minutes. Consult a physician if an irritation persists.

Inhalation: In the case of overexposure, evacuate to fresh air. Consult a physician if required.

Ingestion: Drink plenty of water. Do not induce vomiting. Do not give anything by mouth to an unconscious person. See a physician immediately.

SECTION IX: PREPARATION INFORMATION

Prepared By: The Laboratory, Research and Development Department of Sika Canada Inc. Telephone #: (514) 697-2610 Fax #: (514) 694-2792

Notice To Reader

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All sales of Sika products are subject to its current terms and conditions of sale available at www.sika.ca or 514-697-2610.



SECTION I: PRODUCT INFORMATION

PRODUCT: Sika® Plastocrete 161<sup>CA</sup>

REVISION DATE: February 1<sup>st</sup>, 2012

USAGE: Water-reducing admixture

MANUFACTURER: SIKA CANADA INC.  
18131 – 114<sup>th</sup> Avenue N.W.  
Edmonton, AB  
T5S 1T8

SUPPLIER: SIKA CANADA INC.  
601, avenue Delmar  
Pointe Claire, QC  
H9R 4A9

EMERGENCY TELEPHONE NUMBER: CANUTEC (collect) (613) 996-6666

TDG CLASSIFICATION: Not Regulated  
UN NUMBER: Not Established  
Packaging Group: Not Established

WHMIS Classification: D2B  
Class: Not Established

SECTION II: HAZARDOUS INGREDIENTS

Hazardous ingredients	%	T.L.V.	# CAS	LD <sub>50</sub> (mg/kg) (Species, route)	LC <sub>50</sub> (Species, route)
TRI-ETHANOLAMINE	3-7	5 mg/m <sup>3</sup>	102-71-6	9 110 (oral, rat)	Not Available

SECTION III: PHYSICAL CHARACTERISTICS

Physical State:	Liquid	Boiling Point:	> 100°C
Appearance and Odor:	Dark brown with sweet odor	Freezing Point:	< 0°C
Odor Threshold:	Not Applicable	Density:	1.181 – 1.187 g/ml @ 23°C
Evaporation Rate:	< 1 (Butyl Acetate = 1)	Water Solubility:	Infinite
Vapor Density:	Not Applicable	pH:	7 - 9
Vapor Pressure:	21.068 mm Hg @ 23°C	% volatility:	Not Applicable
		Water/Oil Distribution:	Not Applicable



PRODUCT: Sika® Plastocrete 161<sup>CA</sup>

SECTION IV: FIRE AND EXPLOSION HAZARDS

Flammability:	No	TDG Flammability Class:	Not Regulated
If Yes, under what conditions:		Flammable upper limits (% vol.):	Not Established
		Flammable lower limits (% vol.):	Not Established
		Flash Point (method used):	Not Established
		Auto-ignition temperature:	Not Established
Extinguishing methods:	Water spray (fog) foam, dry chemical or CO <sub>2</sub>	Dangerous Combustion Products:	Carbon oxides
		Protect from mechanical impact:	No
Special Methods:	Fire fighters should wear the usual protective gear and NIOSH approved self-contained breathing apparatus with a full face-piece operated in the pressure demand or other positive pressure mode.	Protect from static discharge:	No

SECTION V: REACTIVITY

Chemical stability:	Yes	Dangerous decomposition products:	Carbon oxides
If not, under what conditions:			
Incompatibility with other material:	Yes	Polymerization Risks:	Not Established
If Yes, which ones:	Strong acids, strong oxidizing agents, high inorganic salt concentrations.		



PRODUCT: Sika® Plastocrete 161<sup>CA</sup>

SECTION VI: TOXIC PROPERTIES

ROUTE OF ENTRY / CONTACT

Eyes: Mildly irritating. (contact)

Skin: Mildly irritating and may cause drying of the skin. (contact)

Inhalation: Mist may cause minor headache, slight dizziness and nausea.

Ingestion: Mild irritation of mouth and throat. May cause diarrhea.

Carcinogenicity: Not Established

Toxic effects on reproduction: Not Established

Teratogenicity: Not Established

Mutagenicity: Not Established

Product with synergistic effects: Not Established

An acute or chronic exposure will increase the toxic effects mentioned in this section.



PRODUCT: Sika® Plastocrete 161<sup>CA</sup>

SECTION VII: PREVENTIVE MEASURES

PERSONAL PROTECTIVE EQUIPMENT

Gloves: Natural rubber, neoprene or polyethylene gloves.

Respirator: NIOSH approved mask, generally not needed with adequate ventilation. Necessary in areas of poor ventilation.

Eyes: Safety glasses. Under misty conditions, do not wear contact lenses.

Shoes: Ordinary.

Clothing: Rubber Apron.

Other: Eye wash fountain.

OTHERS

Ventilation: Sufficient ventilation required.

Procedure in case of leaks: Absorb with sand or other absorbent material. Residue may be removed with steam or hot water and soap.

Handling and Equipment methods: Avoid skin, eye and clothing contact. Maintain good personal hygiene.

Warehouse Requirements: Keep all containers closed in a cool, dry area. Protect from freezing.

Special Shipping Instructions: See TDG class

Waste Disposal: Dispose of sand and rinse water according to municipal, provincial or federal laws for disposal of chemicals.



PRODUCT: Sika® Plastocrete 161<sup>CA</sup>

SECTION VIII: FIRST AID

**Skin:** Remove and clean all contaminated clothing.  
Wash with plenty of soap and water, for at least 10 minutes.  
Use moisture creams on affected areas.  
Consult a physician if required.

**Eyes:** Rinse immediately with luke warm water, while holding eyelids open, for at least 20 minutes.  
Consult a physician if an irritation persists.

**Inhalation:** In the case of overexposure, evacuate to fresh air.  
Consult a physician if required.

**Ingestion:** Drink plenty of water. Do not induce vomiting.  
Do not give anything by mouth to an unconscious person.  
See a physician immediately.

SECTION IX: PREPARATION INFORMATION

**Prepared By:** The Laboratory, Research and Development Department of Sika Canada Inc.  
**Telephone #:** (514) 697-2610  
**Fax #:** (514) 694-2792

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