



## MATERIAL SAFETY DATA SHEET

### Section 1 Identification

**Product name(s):** Portland Cement

**Product code:** Type I, III, Product, Bantox, Hardie

**Trade names and synonyms:** Cement, Hydraulic cement, Portland cement silicate

**Chemical family:** Calcium compounds. Calcium silicate compounds and other calcium compounds containing iron and aluminum make up the majority of this product. Major compounds:

3CaO•SiO <sub>2</sub>	Tricalcium silicate
2CaO•SiO <sub>2</sub>	Dicalcium silicate
3CaO•Al <sub>2</sub> O <sub>3</sub>	Tricalcium aluminate
4CaO•Al <sub>2</sub> O <sub>3</sub> •Fe <sub>2</sub> O <sub>3</sub>	Tetracalcium aluminoferrite
CaSO <sub>4</sub> •2H <sub>2</sub> O	Calcium sulfate dihydrate or Gypsum

**Product use:** Building materials, construction, a basic ingredient of concrete.

### Company Identification:

Illinois Cement  
1601 Rockwell Road  
LaSalle, Illinois 61301

Phone (815)224-2112, MSDS information M – F, 8 – 4 CST

### Emergency Telephone Number:

(815)224-2112

### Section 2 Hazards Identification

#### EMERGENCY OVERVIEW:

Portland cement is a gray or white powder. A single short term exposure to the dry powder is not likely to cause serious harm. **Danger! Overexposure to wet Portland cement can cause serious, potentially irreversible skin or eye damage in the form of**

**chemical (caustic) burns, including third degree burns. The same serious injury can occur if wet or moist skin has prolonged exposure to dry Portland cement.**

**OSHA HAZARD COMMUNICATION STANDARD:** This material is considered hazardous by OSHA Hazard Communication Standard (29 CFR 1910.1200).

**POTENTIAL HEALTH EFFECTS:**

**Primary Route(s) of Exposure:** skin contact, eye contact, inhalation

**Eye Contact:**

Exposure to dust may cause immediate or delayed irritation or inflammation. Eye contact by 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 4) and medical attention to prevent significant damage to the eye.

**Skin Contact:**

Contact with cement can cause drying of the skin, irritation, severe chemical burns (third-degree), and dermatitis.

Overexposure to wet cement can cause severe skin damage in the form of chemical burns, including third degree burns. The same severe injury can occur if wet or moist skin is exposed to dry portland cement. Portland cement causes skin burns with little warning; discomfort or pain cannot be relied upon to alert a person to a serious injury. You may not feel pain or the severity of the burn until hours after the exposure.

Portland cement can cause dermatitis by irritation and allergy. Irritant dermatitis is caused by fine particles of cement that abrade the skin mechanically and cause irritation resulting in dermatitis. Portland cement may contain trace amounts of hexavalent chromium. Hexavalent chromium is associated with allergic skin reactions which may appear as contact dermatitis and skin ulcerations. Persons already sensitized may react to their first exposure to cement. Other individuals may develop allergic dermatitis after repeated exposure to cement. The symptoms of allergic reactions may include reddening of the skin, rash, and irritation. Symptoms of chronic exposure to wet cement may include reddening, irritation, and eczematous rashes. Drying, thickening, and cracking of the skin and nails may also occur.

**Inhalation:**

Dusts may irritate the nose, throat, and respiratory tract. Coughing, sneezing, and shortness of breath may occur following exposures in excess of appropriate exposure limits. Prolonged and repeated inhalation of respirable crystalline silica-containing dust in excess of appropriate exposure limits has caused silicosis, fibrosis or scar tissue formations in the lungs.

**Ingestion:**

Although small quantities of dust are not known to be harmful, ingestion of large quantities may cause severe irritation and chemical burns of the mouth, throat, stomach and digestive tract. Do not ingest Portland cement.

**Carcinogenicity:**

Portland cement is not listed as a carcinogen by NTP, OSHA, or IARC.

**MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED BY EXPOSURE**

Contact with wet cement may aggravate existing skin conditions. Inhaling dust may aggravate existing respiratory and lung diseases. Dust may aggravate existing skin and eye conditions. Sensitivity to hexavalent chromium can be aggravated by exposure.

**SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS**

Hazardous Substance(s):

Name	CAS #	Percent (by weight)
Portland Cement	65997-15-1±	100%

±Portland cement is a statutory mixture which contains calcium silicate compounds and other calcium compounds containing iron and aluminum that make up the majority of the product.

**Hazardous Constituents(s) Contained in Portland Cement:**

Name	CAS#	Percent (by weight)
Gypsum; calcium sulfate	13397-24-5; 7778-18-9	List if $\geq$ 1.0%
Crystalline silica (quartz)	14808-60-7	List if $\geq$ 0.1%
Limestone; calcium carbonate	1317-65-3; 471-34-1	List if $\geq$ 1.0%
Calcium oxide	1305-78-8	List if $\geq$ 1.0%
Magnesium oxide	1309-48-4	List if $\geq$ 1.0%

**SECTION 4 FIRST AID MEASURES**

**SKIN CONTACT**

Heavy exposure to Portland cement dust, we concrete or associated water requires prompt attention. Quickly remove contaminated clothing, shoes, and leather goods (e.g. watchbands, belts). Quickly and gently blot or brush away excess Portland cement. Immediately wash thoroughly with lukewarm, gently flowing water and nonabrasive soap. Seek medical attention for rashes, burns, irritation, dermatitis and prolonged unporotected exposures to wet cement, cement mixtures or liquids from wet cement. Burns should be treated as caustic burns. Portland cement causes skin burns with little warning; discomfort or pain cannot be relied upon to alert a person to a serious injury. You may not feel pain or the severity of the burn until hours after the exposure.

**EYE CONTACT**

Quickly and gently blot or brush Portland cement off the face. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 15-20 minutes, while holding the eyelid(s) open. Take care not to rinse contaminated water into the unaffected eye or onto the face. Immediately obtain medical attention.

#### INHALATION

Remove source of contamination or move victim to fresh air. If breathing is difficult, trained personnel should administer emergency oxygen. DO NOT allow victim to move about unnecessarily. Seek medical help if coughing and other symptoms persist. Inhalation of large amounts of Portland cement requires immediate medical attention.

#### INGESTION

NEVER give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Have victim drink 60 to 240 mL (2 to 8 oz. of water.) of water. Immediately obtain medical attention.

### SECTION 5 FIRE-FIGHTING MEASURES

#### EXTINGUISHING MEDIA

Use extinguishing media appropriate for surrounding fire.

#### PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS

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.

#### SPECIFIC HAZARDS ARISING FROM THE MATERIAL

Avoid breathing dust. Wet cement is caustic.

Hazardous combustion products: none known

### SECTION 6 ACCIDENTAL RELEASE MEASURES

#### PERSONAL PRECAUTIONS

Wear appropriate personal protective equipment as described in Section 8. Avoid inhalation of dust and contact with skin.

#### METHODS FOR CLEAN-UP

Carefully shovel dry spilled material and place in suitable container. Avoid generating dust and actions that cause dust to become airborne. Scrape up wet material and place in an appropriate container. Allow the material to dry or solidify before disposal.

#### ENVIRONMENTAL PRECAUTIONS

Do not attempt to wash Portland cement down drains. Prevent spilled materials from inadvertently entering streams, drains or sewers. Large spills to waterways may be hazardous due to alkalinity of the product.

## SECTION 7            HANDLING AND STORAGE

### HANDLING

Persons using Portland cement should be familiar with its properties and hazards. A key to using the product safely requires the user to recognize that Portland cement reacts chemically with water to produce calcium hydroxide that can cause severe chemical burns.

Avoid actions that generate dust and cause dust to become airborne. Avoid prolonged exposure to dust.

Every attempt should be made to avoid skin and eye contact with cement. Do not get Portland cement inside boots, shoes, or gloves. Do not allow wet, saturated clothing to remain against the skin. Promptly remove clothing and shoes that are dusty or wet with cement fluids and launder/clean before reuse. Wash thoroughly after exposure to dust or wet cement mixtures.

Do not enter a confined space that stores or contains Portland cement unless appropriate procedures and protection are available. Portland cement can build up or adhere to walls of a confined space and release or fall suddenly. Likewise, do not walk on top of Portland cement stored in vessels, bins and silos (engulfment).

### STORAGE

Keep Portland cement dry until used.

### SPECIFIC USES

Drying Portland cement is hygroscopic-it absorbs water. Portland cement needs water to harden. It will draw water away from any material it contacts-including skin.

Respirable crystalline silica-containing dust may be generated by Portland cement and when hardened product is subjected to mechanical forces, such as sanding crushing, grinding, cutting.

## SECTION 8            EXPOSURE CONTROLS/PERSONAL PROTECTION

### EXPOSURE GUIDELINES

Exposure limits:

### ENGINEERING CONTROLS

Avoid creating dust and actions that cause dust to become airborne. Use general or local exhaust ventilation as required to maintain exposures below appropriate exposure limits. Use product in well ventilated areas. If ventilation is not adequate, see the respiratory protection recommended below.

## PERSONAL PROTECTION

### Respiratory Protection:

Ordinarily, a respirator should not be required when handling wet cement. Use NIOSH approved respirators, when an exposure limit is likely to be exceeded, in poorly ventilated areas, or when dust causes discomfort or irritation. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a use training program, respirator repair and cleaning, respirator fit testing, and other requirements.

### Hand Protection:

Use impervious, waterproof, abrasion-and alkali-resistant gloves. Do not rely on barrier creams in place of impervious gloves. Do not get Portland cement inside gloves.

### Eye Protection:

To prevent eye contact wear safety glasses with side shields, safety goggles or face shields when handling dust or wet cement. Dust goggles should be worn in extremely dusty conditions. Wearing contact lenses when working with cement is not recommended.

### Skin and Body Protection:

Use impervious, waterproof, abrasion- and alkali-resistant boots and protective long-sleeved and long-legged clothing to protect the skin from contact with wet Portland cement. Where required to reduce foot and ankle exposure, wear impervious boots that are high enough to prevent Portland cement from getting inside them. Do not get Portland cement inside boots, shoes, or gloves. Remove clothing and protective equipment that becomes saturated with cement and immediately wash exposed areas.

## GENERAL HYGIENE CONSIDERATIONS:

Clean water should always be readily available for skin and (emergency) eye washing. Periodically wash areas contacted by Portland cement with a pH neutral soap and clean, uncontaminated water. Wash again at the end of the work. If irritation occurs, immediately wash the affected area and seek treatment. If clothing becomes saturated with Portland cement, it should be removed and replaced with clean dry clothing. Begin each day by wearing clean clothing and conclude the day with a bath or shower.

## SECTION 9

## PHYSICAL AND CHEMICAL PROPERTIES

Typical physical and chemical properties are given below. Consult the Supplier in Section 1 for additional data.

Physical state: solid  
Appearance: gray or white powder  
Odor: odorless  
Odor threshold: not determined  
Specific Gravity: 2.3 – 3.1  
Flammability: not flammable  
Flash point °C (°F) [method]: not combustible  
Flammable limits (approx. Volume % in air) – LEL: not applicable UEL: not applicable  
Autoignition temperature °C (°F): not applicable  
Boiling point/range °C (°F): > 1000°C (1832°F)  
Melting point: > 1000°C (1832°F)  
Decomposition temperature: not determined  
Vapor density @ 101 kPa (air=1): not applicable  
Evaporation rate (n-butyl acetate =1): not applicable  
pH: 12-13  
Log POW (n-Octanol/water partition coefficient): not applicable  
Solubility in water: slightly soluble (0.1-1.0%)

## SECTION 10 STABILITY AND REACTIVITY

STABILITY: Stable. Keep dry until used/

Reacts slowly with water forming hardened hydrated compounds, releasing heat and producing a strong alkaline solution.

### INCOMPATIBILITIES:

Portland cement is highly alkaline and will react with acids to produce a violent, heat-generating reaction. Toxic gases or vapors may be given off depending on the acid involved. Reacts with acids, aluminum metals and ammonium salts. Aluminum powder and other alkali and alkaline earth elements will react in wet mortar or concrete, liberating hydrogen gas.

Limestone ignites on contact with fluorine and is incompatible with acids, alum, ammonium salts, and magnesium. Silica reacts violently with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride yielding possible fire and/or explosions. Silicates dissolve readily in hydrofluoric acid producing a corrosive gas – silicon tetrafluoride.

HAZARDOUS DECOMPOSITION PRODUCTS: None known.

HAZARDOUS POLYMERIZATION: Not known to polymerize.

## SECTION 11 TOXICOLOGICAL INFORMATION

## **ACUTE TOXICITY**

Portland cement LD<sub>50</sub> / LC<sub>50</sub> – not available

## **CARCINOGENICITY**

### **A: General Product Information**

The Occupational Safety and Health Administration (OSHA), the National Toxicology Program (NTP) and the International Agency for Research on Cancer (IARC) have not listed Portland cement as a carcinogen.

### **B: Component Carcinogenicity**

## **CHRONIC TOXICITY**

Crystalline silica is considered a hazard by inhalation. IARC has classified crystalline silica as a Group 1 substance, carcinogenic to humans. This classification is based on the findings of laboratory animal studies (inhalation and implantation) and epidemiology studies that were considered sufficient for carcinogenicity. Excessive exposure to crystalline silica can cause silicosis, a non-cancerous lung disease.

## **SECTION 12 ECOLOGICAL INFORMATION**

**ECOTOXICITY:** Portland cement hardens with water or moisture and is not expected to present unusual ecotoxicity risks. See Sections 9 and 10 for relevant physical and chemical properties.

## **SECTION 13 DISPOSAL CONSIDERATIONS**

### **DISPOSAL RECOMMENDATIONS:**

Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

**REGULATORY DISPOSAL INFORMATION:** If Portland cement as supplied becomes a waste, it does not meet the criteria of a hazardous waste as defined under the Resource Conservation and Recovery ACT (RCRA) 40 CFR 261.

## **SECTION 14 TRANSPORT INFORMATION**

**LAND (DOT):** Not regulated for land transport

**LAND (Transport Canada / TDG):** Not regulated for land transport

**SEA (IMO / International Maritime Organization):** Not regulated for sea transport according to IMO-regulations

**AIR (IATA / International Air Transport Association):** Not regulated for air transport

## **SECTION 15 REGULATORY INFORMATION**

**USA REGULATIONS:**

**TOXIC SUBSTANCES CONTROL ACT (TSCA)**

Portland cements are considered to be statutory mixtures under TSCA. Cement, Portland, Chemicals [65997-15-1] is included on the TSCA Inventory.

**CERCLA:**

This product is not listed as a CERCLA hazardous substance.

**SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) TITLE III**  
**Information:**

**SARA (302/304) EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355):**

This product contains no “Extremely Hazardous Substances”.

**SARA (311/312) REPORTABLE HAZARD CATEGORIES (40 CFR 370.21):**

Immediate Hazard: Yes

Delayed Hazard:

Fire Hazard: No

Reactive Hazard: No

Pressure Hazard: No

**SARA (313) TOXIC RELEASE INVENTORY (40 CFR 372.65):**

**FEDERAL HAZARDOUS SUBSTANCES ACT (FHSA):**

Portland cement is a “hazardous substance” subject to statutes promulgated under the FHSA.

**SECTION 16                  OTHER INFORMATION**

**REVISION DATE:**

**REVISION INDICATOR:** This version of the MSDS contains revisions in Sections:

**ABBREVIATIONS:**

ACGIH = American Conference of Governmental Industrial Hygienists

CAS = Chemical Abstract Service

CERCLA = Comprehensive Environmental Response, Compensation and Liability Act

CFR = Code of Federal Regulations

DOT = USA Department of Transportation

IARC = International Agency for Research on Cancer

MSHA = Mine Safety and Health Administration

NIOSH = National Institute for Occupational Safety and Health

NTP = National Toxicology Program

OSHA = Occupational Health and Safety Administration

PEL = Permissible Exposure Limit

RCRA = Resource Conservation and Recovery Act

SARA = Superfund Amendments and Reauthorization Act

TLV = Threshold Limit Value

TRI = Toxic Release Inventory

TWA – Time Weighted Average

WHMIS – Workplace Hazardous Materials Identification System

**DISCLAIMER:**

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, the sheet cannot anticipate and provide the 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 portlands, for example, Portland cement concrete.

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