

**Section 1- IDENTIFICATION**

Product name

Iron Clad Portland Cement - Type I, Type II, Type III and Block

MSDS information

This MSDS was produced in February 2000 and replaces any prior versions.

Product code

CAS# 65997-15-1

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

Chemical name and synonyms

Portland cement. Portland cement is also known as hydraulic cement.

Formula

This product consists of finely ground portland cement clinker mixed with a small amount of calcium sulfate dihydrate (gypsum).

Manufacturer

Glens Falls Lehigh Cement Company  
 313 Lower Warren Street  
 Glens Falls, New York 12801  
 Telephone Number (518) 792-1137

**Section 2- COMPONENTS**

Hazardous Ingredients

Portland cement (CAS# 65997-15-1) - approximately 94-97% by weight  
 ACGIH TLV-TWA (1995-1996) = 10 mg total dust/m<sup>3</sup>  
 OSHA PEL (8-hour TWA) = 50 million particles/ft<sup>3</sup>

Gypsum (CAS# 7778-18-9) - approximately 3-6% by weight  
 ACGIH TLV - TWA( 1995-1996) = 10 mg total dust/m<sup>3</sup>  
 OSHA PEL (8-hour TWA) = 10 mg total dust/m<sup>3</sup>  
 OSHA PEL (8-hour TWA) = 5 mg respirable dust/m<sup>3</sup>

Quartz (CAS# 14808-60-7) -less than 0.1 % by weight  
ACGIH TLV-TWA (1995-1996) =0.10 mg respirable quartz dust/m<sup>3</sup>  
OSHA PEL (8-hour TWA) (10 mg of respirable dust/m<sup>3</sup>)/(percent silica + 2)  
NIOSH REL (8-hour TWA) =0.05 mg respirable quartz dust/m<sup>3</sup>

#### Trace Elements

Portland cement is made from materials mined from the earth and is processed using energy provided by fuels. Trace amounts of naturally occurring, potentially harmful chemicals might be detected during chemical analysis. For example, portland cement may contain up to 0.75% insoluble residue, some of which may be free crystalline silica. Other trace constituents may include calcium oxide (also known as free lime or quick lime), free magnesium oxide, potassium and sodium sulfate compounds, chromium compounds, and nickel compounds.

### Section 3- 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 of sufficient duration to wet portland cement can cause serious, potentially irreversible tissue (skin or eye) destruction in the form of chemical (caustic) burns, including third degree burns. 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 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.

##### **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 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 their first contact with the product. Other persons may first experience this effect after years of contact with portland cement products.

**Effects resulting from inhalation:**

Portland cement may contain trace amounts of free crystalline silica. Prolonged exposure to respirable free crystalline silica may aggravate other lung conditions. It also may cause delayed lung injury including silicosis, a disabling and potentially fatal lung disease, and/or other diseases. (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:**

Portland cement is not listed as a carcinogen by NTP, OSHA, or IARC. It may, however, contain trace amounts of substances listed as carcinogens by these organizations.

Crystalline silica, a potential trace level contaminant in portland cement, is now classified by IARC as a known human carcinogen (Group 1). NTP has characterized respirable silica as "reasonably anticipated to be [a] carcinogen".

**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+<sup>6</sup>) salts.

**Section 4 - 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 intended for use on skin. Seek medical treatment in all cases of prolonged exposure to wet cement, cement mixtures, 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 and 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 5- FIRE & EXPLOSION DATA**

- Flash point.....None
- Lower Explosive Limit.....None
- Upper Explosive Limit.....None

Auto ignition temperature.....	Not combustible
Extinguishing media.....	Not combustible
Special fire fighting procedures.....	None (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.)
Hazardous combustion products.....	None
Unusual fire and explosion hazards.....	None

**Section 6- 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 8.

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 7- HANDLING AND 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.

**Section 8- EXPOSURE CONTROLS/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 eliminate skin contact. Where required, wear 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 gloves.

Periodically wash areas contacted by dry portland cement or by wet cement or concrete fluids 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-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

When engaged in activities where cement dust or wet cement or concrete could contact the eye, wear safety glasses with side shields or goggles. In extremely dusty environments and 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 9- PHYSICAL AND CHEMICAL PROPERTIES**

Appearance.....	Gray or white powder
Odor.....	No distinct odor
Physical state.....	Solid (powder)
pH (in water) (ASTM D 1293-95).....	12 to 13
Solubility in water.....	Slightly soluble (0.1 to 1.0 %)
Vapor pressure.....	Not applicable
Vapor density.....	Not applicable
Boiling point.....	Not applicable (i.e., > 1000°C)
Melting point.....	Not applicable
Specific gravity (H <sub>2</sub> O = 1.0).....	3.15
Evaporation rate.....	Not applicable

**Section 10- STABILITY AND REACTIVITY**Stability

Stable

Conditions to avoid

Unintentional contact with water.

Incompatibility

Wet portland cement is alkaline. As such it is incompatible with acids, ammonium salts and aluminum metal.

Hazardous decomposition

Will not spontaneously occur. Adding water results in hydration and produces (caustic) calcium hydroxide.

Hazardous polymerization

Will not occur.

**Section 11- TOXICOLOGICAL INFORMATION**

For a description of available, more detailed toxicological information, contact the supplier or manufacturer.

**Section 12- ECOLOGICAL INFORMATION**Ecotoxicity

No recognized unusual toxicity to plants or animals

Relevant physical and chemical properties

(See Sections 9 and 10.)

**Section 13- DISPOSAL**

Dispose of waste 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 14- TRANSPORTATION DATA**

Hazardous materials description/proper shipping name

Portland cement is not hazardous under U.S. Department of Transportation(DOT) regulations.

Hazard class

Not applicable.

Identification number

Not applicable.

Required label text

Not applicable.

Hazardous substances/reportable quantities (RO)

Not applicable.

**Section 15- OTHER REGULATORY INFORMATION**

Status under USDOL-OSHA Hazard Communication Rule. 29 CFR 1910.1200

Portland cement is considered a "hazardous chemical" under this regulation, and should be part of any hazard communication program.

Status under CERCLA/Superfund. 40 CFR 117 and 302

Not listed.

Hazard Category under SARA (Title III). Sections 311 and 312

Portland cement qualifies as a "hazardous substance" with delayed health effects.

Status under SARA (Title III) Section 313

Not subject to reporting requirements under Section 313.

Status under TSCA (as of May 1997)

Some substances in portland cement are on the TSCA inventory list.

Status under the Federal Hazardous Substances Act

Portland cement is a "hazardous substance" subject to statutes promulgated under the subject act.

Status under WHMIS

Portland cement is considered to be a hazardous material under the Hazardous Products Act as defined by the Controlled Products Regulations (Class E - Corrosive Material) and is therefore subject to the labeling and MSDS requirements of the Workplace Hazardous Materials Information System (WHMIS).

**Section 16- OTHER INFORMATION**Prepared by

This MSDS was prepared from information provided by the Portland Cement Association.

Approval date or Revision date

Revised February 4, 2000

Date of previous MSDS

May 10, 1999

Other important 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, the 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.

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