



MATERIAL SAFETY DATA SHEET
Portland Cement

SECTION 1 - IDENTIFICATION

Product Name: Types I, I/IIA, II, IIIA, Red Bag, White Portland

Manufacturer's Name and Address: ALAMO CEMENT COMPANY
P.O. Box 34807
San Antonio, Texas 78265

Telephone Numbers: In Texas: 1(800) 292-5510 - Other: 1(210) 208-1880

Chemical Name and Synonyms: Portland Cement. Portland Cement is also known as hydraulic cement.

Preparation Date: July 9, 2007. Replaces any prior versions.

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 ₂	Tricalcium Silicate
2CaO-SiO ₂	Dicalcium Silicate
3CaO-Al ₂ O ₃	Tricalcium Aluminate
4CaO-Al ₂ O ₃ -Fe ₂ O ₃	Tetracalcium Aluminoferrite
CaSO ₄ ·2H ₂ O	Calcium Sulfate Dihydrate or Gypsum
CaCO ₃	Calcium Carbonate or Limestone

Formula: This product consists of finely ground Portland cement clinker mixed with a small amount of calcium sulfate dihydrate (Gypsum).

SECTION 2 - COMPONENTS

Hazardous Ingredients: Portland cement clinker (CAS #65997-5-1) - approximately 95% by weight
ACGIH TLV-TWA (1995-1996)=10mg total dust/m³
OSHA PEL (8-hour TWA)=50 million particles/ft³
Gypsum (CAS #7778-18-9) - approximately 5% by weight
ACGIH TLV-TWA (1995-1996)=10mg total dust/m³
OSHA PEL (8-hour TWA)=10mg total dust/m³
OSHA PEL (8-hour TWA)=5mg respirable dust/m³

Quartz (CAS #14808-60-7)-less than 0.1% by weight or volume
ACGIH TLV-TWA (1995-1998)=0.10mg respirable quartz dust/m³
OSHA PEL (8-hour TWA)=(10mg of respirable dust/m³)/(Percent silica + 2)
NIOSH REL (8-hour TWA)=0.05mg respirable quartz dust/m³

Trace Constituents: Portland cement is made from materials mined from the earth and is processed using energy provided by fossil fuels. Trace amounts of naturally occurring, potentially harmful chemicals might be detected during chemical analysis. For example, Portland cement may contain up to 2.0% 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 or 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, 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 injury including silicosis, a disabling and potentially fatal lung disease. (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^{VI}) 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. 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 require 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 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 Portland cement. 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 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 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 NIOSHA/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: Where potentially subject to splashes or puffs of cement, 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 Powder
Odor.....No distinct odor
Physical state.....Solid (powder)
pH (in water).....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
Melting Point.....Not applicable
Specific gravity (H₂O=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 phosphorous.

Hazardous decomposition: Will not spontaneously occur. Adding water 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 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 14 - TRANSPORTATION

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 (RQ): 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 MSHA-CERCLA Part 47: NIOSH REL: TWA 10mg/m³ (total) TWA 5MG/M³ (RESP).

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 1987): 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 California Proposition 65: 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.

Status under Canadian Environmental Protection Act: Not listed.

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 Metal) and is therefore subject to the labeling and MSDS requirements of the Workplace Hazardous Materials Information System (WHMIS).

SECTION 16 - OTHER INFORMATION

Revision date: July 9, 2007

Date of previous MSDS: December 30, 2006

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.

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In particular, the data furnished in this 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.