



**Material Safety Data Sheet
For
Portland Cement**

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company 11011 Cody Overland Park, KS 66210

Emergency Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Portland Cement (CAS #65997-15-1)

Trade Name and Synonyms: Type I, IA, II, III, V

Revision Date: August 2004 (This revision supercedes all previous versions)

Chemical Family: Calcium Salts

Formula: Portland cement consists of finely ground portland cement clinker mixed with a small amount of calcium sulfate (gypsum) to control set. No specific formula applies to portland cement.

Section II - Hazardous Ingredients

Ingredients: Substances similar to the following are known to be present in portland cement:

3CaO.SiO₂ (CAS # 12168-85-3)
2CaO.SiO₂ (CAS # 10034-77-2)
3CaO.Al₂O₃ (CAS # 12042-78-3)
4CaO.Al₂O₃.Fe₂O₃ (CAS # 12068-35-8)
CaSO₄.XH₂O (CAS # 13397-24-5)

Small amounts of CaO, MgO, K₂SO₄, Na₂SO₄ may also be present.

Hazardous Components(s):

| Substance | CAS Number | OSHA PEL | ACGIH TLV-TWA | MSHA Exposure Limits |
|-----------------------------------|------------|--|--|--|
| Portland Cement – total dust | 65997-15-1 | 15 mg/m ³ | 10 mg/m ³ (1986) * | 10 mg/m ³ |
| Portland Cement - respirable dust | 65997-15-1 | 5 mg/m ³ | Not Applicable | Not Applicable |
| Quartz | 14808-60-7 | <u>10 mg/m³</u> (% silica + 2) | 0.05 mg/m ³ (2000) (respirable fraction) | <u>10 mg/m³</u> (% silica + 2) |

Note: Some portland cements may contain small amounts of crystalline silica (slightly more than 0.1%).
* Applicable if <1% crystalline silica is present.

Section III - Physical Data

Boiling Point: Not applicable.

Vapor Pressure: Not applicable.

Vapor Density: Not applicable.

Solubility in Water: Slight (0.1-1.0%)

pH (in water) (ASTM D 1293-95): 12 - 13

Specific Gravity: (H₂O=1) 2.9 - 3.1

Evaporation Rate: Not applicable.

Appearance and Odor: Gray powder; no odor.

Melting Point: Not applicable

Section IV - Fire and Explosion Hazard Data

Flash Point: Portland cement is noncombustible and not explosive.

Flammable or Explosive Limits: Not applicable.

Extinguishing Media: Not applicable

Special Firefighting Procedures: Not applicable. (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.)

Unusual Fire and Explosion Hazards: Not applicable.

Lower Explosive Limit: Not applicable.

Upper Explosive Limit: Not applicable.

Section V - Health Hazard Data

Acute Effects: Wet cement on unprotected skin, whether direct or through saturated clothing, can cause severe, third degree caustic burns. **NOTE: Portland cement burns skin with little warning; discomfort or pain cannot be relied upon to alert a person to a hazardous skin exposure. The severity of the burn may not be detected until several hours after the damage begins.** Dry portland cement can produce mild irritation to severe burns of the eye; it can irritate the upper respiratory system.

Chronic Effects: Dry portland cement can cause inflammation of the lining of the nose and the cornea. Repeated exposure to portland cement may result in drying of the skin and may lead to thickening, cracking, or fissuring of the skin. Hypersensitive individuals may develop an allergic dermatitis (possibly due to trace amounts of hexavalent chromium at less than 0.005%). This reaction may appear in several forms including a mild rash to severe skin ulcers. Persons already sensitized may react to their first contact with the product. Other persons may experience this effect after years of exposure to portland cement products.

While portland cement typically has less than 0.2% crystalline silica, other additives to portland cement and those components (e.g. aggregates) added to produce portland cement concrete may significantly increase the amount of crystalline silica that is present. Exposure to respirable crystalline silica without the use of a respirator can cause silicosis and may aggravate other lung conditions.

Signs and Symptoms of Exposure: Burning sensation around moist tissue areas (i.e., eyes, nose, upper respiratory system); painful burning on exposed skin that can develop with little warning. **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 kind of destruction can occur if wet or moist areas of the body are exposed for sufficient duration to dry portland cement. **DO NOT ALLOW WET PORTLAND CEMENT TO GET INSIDE BOOTS, SHOES, OR GLOVES AND DO NOT ALLOW WET, SATURATED CLOTHING TO REMAIN AGAINST THE SKIN.**

Medical Conditions Generally Aggravated by Exposure: Pre-existing skin conditions may be worsened. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection.

Chemical Listed as Carcinogenic or Potential Carcinogen: Portland cements are not considered carcinogenic.

However, the International Agency for Research on Cancer (IARC) has determined, primarily through animal studies, that silica is a known human carcinogen. The National Toxicology Program (NTP) has characterized respirable quartz silica as reasonably anticipated to be a carcinogen. OSHA does not regulate silica as a carcinogen.

Emergency and First Aid Procedures: Irrigate eyes immediately and repeatedly with large amount of clean water for at least 15 minutes and get prompt medical attention. Wash exposed skin areas with pH-neutral soap and clean water. Apply sterile dressings; seek medical treatment in all cases of prolonged exposure to wet portland cement, portland cement mixtures, liquids from fresh portland cement products, or prolonged wet skin exposure to dry portland cement. If ingested, consult a physician immediately. Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately. In the event of inhalation, remove to fresh air. Seek medical attention if coughing and other symptoms do not subside. Inhalation of gross amounts of portland cement requires immediate medical attention.

Section VII-Reactivity Data

Stability: Product is stable. Keep dry until used.

Incompatibility: Aluminum powder and other alkali and alkaline earth elements will react in wet mortar or concrete, liberating hydrogen gas. 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.

Hazardous Decomposition Products: None

Hazardous Polymerization: Will not occur.

Section VII - Spill Procedures

Steps to be taken in case material is spilled: Use dry cleanup methods that do not disperse the dust into the air. Avoid breathing the dust. Emergency procedures are not required.

Disposal Method: Small amounts of material can be returned to the container for later use if it is not contaminated. Dispose of waste material in accordance with Federal, State and local requirements. Portland cement is not a hazardous waste as defined by the Resource Conservation and Recovery Act (40 CFR 261).

Section VIII - Special Protection Information

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: Local exhaust can be used to control airborne dust levels.

Eye Protection: When engaged in activities where portland cement dust or wet portland cement or concrete could contact the eye, wear goggles or safety glasses with sideshields. 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 wet portland cement products.

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. **DO NOT ALLOW WET PORTLAND CEMENT TO GET INSIDE BOOTS, SHOES, OR GLOVES AND DO NOT ALLOW WET, SATURATED CLOTHING TO REMAIN AGAINST THE SKIN.**

Do not rely on barrier creams; barrier creams should not be used in place of gloves. Use impervious, abrasion- and alkali-resistant gloves, boots and protective clothing to protect the skin from prolonged contact with wet portland cement in plastic concrete, mortar or slurries.

Work/Hygienic Practices: Periodically wash areas contacted by dry portland cement or by wet portland cement or concrete fluids 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 wet portland cement or concrete, it should be removed and replaced with clean dry clothing. Follow listed precautions as appropriate during repair or maintenance work on contaminated equipment.

Section IX – Transportation Information

Hazardous materials/proper shipping name description:

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 X – Other Regulatory Information

Status under USDOL-OSHA Hazard Communication Standard (29 CFR 1910.1200)

Portland cement is considered a “hazardous chemical” under this regulation and should be a part of any Hazard Communication Program.

Status under CERCLA / Superfund 40 CFR 117 and 302

Not listed.

Status 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

This product may contain constituents listed under SARA (Title III) Section 313, but not in amounts requiring supplier notification under 40 CFR Part 372 Subpart C.

Status under TSCA (as of May 1997)

Portland cement and some of the 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 crystalline silica and chemicals (trace metals) known to the State of California to cause cancer, birth defects or other reproductive harm. California law requires the above warning in the absence of definitive testing to prove the defined risks do not exist.

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

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 reacts with water, and that some of the intermediate products of this reaction (that is, those present while portland cement is “setting”) pose a far more severe hazard than does portland cement itself.

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

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

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This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.