Material Safety Data Sheet

ARIZONA PORTLAND CEMENT COMPANY
A Division of California Portland Cement Co.
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SECTION 1 - IDENTIFICATION

Product Name:
Arizona Portland Cement (ASTM Type I/II, ASTM Type III, ASTM Type V, ASTM Type S/M Mortar)

Supplier/Manufacturer:
Arizona Portland Cement Company
11115 Casa Granda Highway
Rillito, Arizona 85654
(520) 682-2221

Prepared By:
Grady

Previous MSDS:
This MSDS supersedes all previous versions.

Revision Date:
08-01-02

Chemical Name/Synonyms:
Portland Cement; also known as Cement or Hydraulic Cement.

Chemical Family:
Calcium compounds, major compounds:

$3CaO\text{-}SiO_2$	Tricalcium silicate
$2CaO\text{-}SiO_2$	Dicalcium silicate
$3CaO\text{-}Al_2O_3$	Tricalcium aluminate
$4CaO\text{-}Al_2O_3\text{-}Fe_2O_3$	Tetracalcium aluminoferrite
$CaSO_4\text{-}2H_2O$	Calcium sulfate dihydrate (Gypsum)

SECTION 2 - COMPONENTS

Hazardous Ingredients: ***Total Dust*** ***Respirable Dust***

Portland cement (CAS# 65997-15-1) - approximately 78.5% to 95% by weight.

ACGIH TLV	10 mg/m^3		
OSHA PEL	15 mg/m^3	5 mg/m^3	
OSHA PEL		50 mppcf	(crystalline silica < 1%)

Gypsum (CAS# 13397-24-5) - approximately 5% to 6.5% by weight.

ACGIH TLV	10 mg/m^3		
OSHA PEL	15 mg/m^3	5 mg/m^3	

Limestone (CAS# 1317-65-3) - approximately 0% to 10% by weight.

ACGIH TLV	10 mg/m^3		
OSHA PEL	15 mg/m^3	5 mg/m^3	

Flyash (CAS# 68131-74-8) - approximately 0% to 10% by weight.

ACGIH TLV	10 mg/m^3		
OSHA PEL	15 mg/m^3	5 mg/m^3	

Lime (hydrated) (CAS# 1305-62-0) - approximately 0% to 8% by weight.

ACGIH TLV	10 mg/m^3		
OSHA PEL	15 mg/m^3	5 mg/m^3	

Crystalline Silica (CAS# 14808-60-7) - approximately 0% to 1.4% by weight.

ACGIH TLV		0.1 mg/m^3	
OSHA PEL	8.8 mg/m^3		(30 mg/m^3 / (1.4% SiO_2 +2))
OSHA PEL		2.9 mg/m^3	(10 mg/m^3 / (1.4% SiO_2 +2))
OSHA PEL		39 mppcf	(250 / (1.4% SiO2 +5)) mppcf

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 1.50% 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, and trace metal 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. 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.

Routes of Exposure:

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.

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. 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.

Ingestion

Although inadvertent ingestion of small quantities of portland cement or its dust are not known to be harmful, accidental ingestion of larger quantities can be harmful and requires immediate medical attention.

Inhalation

Exposure to portland cement in excess of the applicable TLV or PEL (see Section 2) may cause or aggravate other lung conditions. Portland cement may contain trace amounts of crystalline silica. Exposure to crystalline silica in excess of its TLV or PEL may also cause delayed lung injury including silicosis, 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.

Medical Conditions which May be Aggravated by Inhalation or Dermal Exposure:

Pre-existing upper respiratory and lung diseases.

Persons with unusual (hyper) sensitivity to chemicals, dusts, and metallic compounds may experience adverse reactions to portland cement.

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, hexavalent chromium, lead compounds, mercury compounds, nickel compounds, and possibly other chemicals.

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.

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

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.)

SECTION 5 - FIRE & EXPLOSION DATA

Flash Point	None	**Extinguishing Media**	Not Combustible
Lower Explosive Limit	None	**Special Fire Fighting Procedures**	None
Upper Explosive Limit	None	**Hazardous Combustion Products**	None
Auto Ignition Temperature	Not Combustible	**Unusual Fire & 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 & 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

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 8 - EXPOSURE CONTROL/PERSONAL PROTECTION (continued)

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.

NIOSH or MSHA approved particulate filter respirators should be used in the context of respiratory protection program meeting the requirements of the OSHA respiratory protection standard [29 CFR 1910.134] to control exposures when ventilation or other controls are inadequate or discomfort or irritation is experienced. Respirator and/or filter cartridge selection should be based on American National Standards Institute (ANSI) Standards Z88.2 Practices for Respiratory Protection.

Ventilation:

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

SECTION 9 - PHYSICAL & CHEMICAL PROPERTIES

Appearance.....Gray Powder

Odor..... No Distinct Odor

Physical State.....Solid (powder)

Specific Gravity (H_2O = 1).....3.15

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

Solubility in Water..... Slightly Soluble

Vapor Pressure .....Not Applicable

Vapor Density.....Not Applicable

Boiling Point.....Not Applicable

Melting Point.....Not Applicable

Evaporation Rate.....Not Applicable

SECTION 10 - STABILITY & 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

NIOSH conducted a study, "The Mortality of U.S. Portland Cement and Quarry Workers" (March 1985) which found: "There is no excess mortality from all causes of death, lung cancer, non-malignant respiratory disease, or ischemic heart disease" among workers studied.

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.

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 (RQ):
Not Applicable

SECTION 15 - OTHER REGULATORY INFORMATION

Status under OSHA Hazard Communication Standard, 29 CFR 1910.1200:
Portland cement is considered a "hazardous chemical" under this regulation, and should be included in the employer's hazard communication program.

Reportable Quantities Under the Clean Water Act, CERCLA, and EPCRA, 40 CFR 117, 302 and 355:
Portland cement is not Listed.

Hazard Category and Applicability of EPCRA Hazardous Substance Inventory Reporting, 40 CFR 370:
Portland cement qualifies as a "hazardous substance" with delayed health effects.

Applicability of EPCRA Toxic Chemical Release Inventory (TRI) Reporting. 40 CFR 372:
Portland cement is not a TRI listed chemical, however TRI listed constituents are present in concentrations below the Supplier Notification De Minimus Levels.

Status Under the Toxic Substances Control Act, 40 CFR 710:
Portland cement and the chemicals present in portland cement are on the TSCA inventory list.

SECTION 15 - OTHER REGULATORY INFORMATION (Continued)

Status under the Federal Hazardous Substances Act and Its Regulations:

Portland cement is a "hazardous substance" subject to the following labeling requirements for consumer use:

WARNING: INJURIOUS TO EYES. CAUSES SKIN IRRITATION. READ THIS WARNING BEFORE USING.

Contact with cement (including unhardened concrete, mortar, wet cement, or cement mixtures) can cause skin irritation, severe chemical burns, or serious eye damage. Avoid contact with eyes and skin. Wear waterproof gloves, a fully buttoned long-sleeved shirt, full-length trousers, and tight fitting eye protection when working with these materials. If you have to stand in cement or wet concrete, use waterproof boots that are tight at tops and high enough to keep cement or concrete from flowing into them. If you are finishing concrete wear knee pads to protect knees. Wash cement, wet concrete, mortar, wet cement, or cement mixtures from your skin with fresh, clean water immediately after contact. Indirect contact through clothing can be as serious as direct contact, so promptly rinse out cement, wet concrete, mortar, wet cement, or cement mixtures from clothing. Seek immediate medical attention if you have persistent or severe discomfort. In case of eye contact, flush with plenty of water for at least 15 minutes. Consult a physician immediately.

KEEP OUT OF REACH OF CHILDREN.

USER AGREES TO CONVEY THIS WARNING TO ALL PERSONS WHO MAY PURCHASE, USE OR COME IN CONTACT WITH CEMENT, WET (UNHARDENED) CONCRETE, MORTAR, WET CEMENT OR CEMENT MIXTURES

Status under Workplace Hazardous Materials Information System (WHMIS), Canada:

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).

Status under Canadian Environmental Protection Act:

Not Listed.

SECTION 16 - OTHER INFORMATION

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 does 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.

SECTION 15 - OTHER INFORMATION (Continued)

Abbreviations:

ACGIH
American Conference of Governmental Industrial Hygienists

ANSI
American National Standards Institute

CAS
Chemical Abstract Service

CERCLA
Federal Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)

CFR
Code of Federal Regulations

DOT
Department of Transportation

EPCRA
Emergency Planning and Community Right-to-Know Act of 1986

IARC
International Agency for Research on Cancer

m^3
Cubic Meter

mg
Milligram

mppcf
Million Particles per Cubic Foot

MSDS
Material Safety Data Sheet

MSHA
Mine Safety and Health Administration

NIOSH
National Institute of Occupational Safety and Health

NTP
National Toxicology Program

OSHA
Occupational Safety and Health Administration

PEL
Permissable Exposure Limit

RQ
Reportable Quantities

SiO_2
Crystalline Silica, Quartz

TLV
Threshold Limit Values

TRI
Toxic Release Inventory

TSCA
Toxic Substance Control Act

WHMIS
Workplace Hazardous Materials Information System

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