

MATERIAL SAFETY DATA SHEET



1. Product and Company Identification

Material name	Portland Cement (cement)
Version #	02
Issue date	12-20-2011
Revision date	10-12-2012
Supersedes date	12-20-2011
CAS #	Mixture
Product use	Cement is used as a binder in concrete and mortars that are widely used in construction.
Synonym(s)	Cement, Portland Cement, Hydraulic Cement, Oil Well Cement, Trinity® White Cement, Antique White Cement, Portland Limestone Cement, * Portland Cement Type I, IA, IL, II, IIA, II L.A., III, IIIA, IV, IVA, V, VA, 10, 20, 30, 40, 50, GU, GUL, MS, MH, HE, LH, HS, OWH, OWG Cement, OWG Class G HSR Includes Florida Portland Cement Type I/II, III and White Portland Type I.
Manufacturer/Supplier	Argos Cement 3015 Windward Plaza Drive Suite 300 Alpharetta, GA 30005 mheaton@argos-us.com Contact Person: Michael J. Heaton
Telephone number	(678)368-4300 (8 AM-4 PM EST)
Emergency	3E Hotline 1-800-451-8346

2. Hazards Identification

Physical state	Solid.
Appearance	Gray, off-white or white powder.
Emergency overview	WARNING! Product becomes alkaline when exposed to moisture. Contact with wet concrete can burn skin and eyes. Dust from the dry material can cause irritation and possible burns to the eyes and respiratory tract.
OSHA regulatory status	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects	
Routes of exposure	Inhalation. Ingestion. Skin contact. Eye contact.
Eyes	Contact may irritate or burn eyes. Eye contact may result in corneal injury.
Skin	Contact may irritate or burn skin. Symptoms may be delayed. The product may contain chromates, which may cause an allergic skin sensitization reaction. Frequent or prolonged contact may defat and dry the skin, leading to discomfort and dermatitis.
Inhalation	Inhalation of dusts may cause respiratory irritation or burns. May cause cancer by inhalation.
Ingestion	Irritating. May cause nausea, stomach pain and vomiting.
Target organs	Eyes. Lungs. Respiratory system. Skin.
Chronic effects	Cement may contain trace amounts of respirable crystalline silica and hexavalent chromium which are classified by NTP and IARC as known human carcinogens. This product has the potential for generation of respirable dust during handling and use. Dust may contain respirable crystalline silica. Overexposure to dust may result in pneumoconiosis, a respiratory disease caused by inhalation of mineral dust, which can lead to fibrotic changes to the lung tissue, or silicosis, a respiratory disease caused by inhalation of silica dust, which can lead to inflammation and fibrosis of the lung tissue. Occupational exposure to respirable dust and respirable crystalline silica should be monitored and controlled. May cause delayed lung injury.
Signs and symptoms	Conjunctivitis. Corneal damage. Shortness of breath. Coughing. Discomfort in the chest. Irritation of eyes and mucous membranes. Irritation of nose and throat. Skin irritation. Rash. Defatting of the skin.
Potential environmental effects	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Portland cement	65997-15-1	50-98
Limestone	1317-65-3	0-15
Calcium sulfate dihydrate	13397-24-5	2-10
Calcium oxide	1305-78-8	0-5
Magnesium oxide	1309-48-4	0-4
Quartz	14808-60-7	0-0.2

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First Aid Measures

First aid procedures

Eye contact	Immediately rinse eyes with water. Remove any contact lenses, and continue flushing eyes with running water for at least 15 minutes. Hold eyelids apart to ensure rinsing of the entire surface of the eye and lids with water. Get immediate medical attention.
Skin contact	Wash off with plenty of water. Remove contaminated clothing and shoes. Launder contaminated clothing before reuse. If skin irritation or rash occurs: Get medical advice/attention.
Inhalation	Inhalation of wet product not foreseeable route of exposure. If dust from the material is inhaled, remove the affected person immediately to fresh air. Get medical attention if irritation or symptoms persist.
Ingestion	Never give anything by mouth to an unconscious person. Do not induce vomiting. Rinse mouth with water and afterwards drink plenty of water. Get immediate medical attention.

Notes to physician Provide general supportive measures and treat symptomatically. Persons with impaired lung function may be more susceptible to the effects of this material.

5. Fire Fighting Measures

Flammable properties This product is not flammable or combustible.

Extinguishing media

Suitable extinguishing media	Use fire-extinguishing media appropriate for surrounding materials.
Unsuitable extinguishing media	None.

Protection of firefighters

Protective equipment and precautions for firefighters Use protective equipment appropriate for surrounding materials.

Fire fighting equipment/instructions None.

6. Accidental Release Measures

Personal precautions Keep unnecessary personnel away. Wear appropriate protective equipment and clothing during clean-up. Avoid inhalation of dust from the spilled material. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust at levels exceeding the exposure limits. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Environmental precautions Prevent further leakage or spillage if safe to do so.

Methods for containment Stop the flow of material, if this is without risk. If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product. Prevent entry into waterways, sewers, basements or confined areas.

Methods for cleaning up For a dry material spill, use a HEPA (high efficiency particle air) vacuum to collect material and place in a sealable container for disposal. Avoid dust formation. For a wet spill, absorb or cover with dry earth, sand or other non-combustible material and transfer to containers for disposal. Neutralize the spill area. Use materials that can withstand the potentially corrosive nature of this product. Do not get water inside containers.

Other information Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling

Wear personal protective equipment. Handle and open container with care. Minimize dust generation and accumulation. Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged exposure. Use only with adequate ventilation. Wash thoroughly after handling. See Section 8 of the MSDS for Personal Protective Equipment.

Storage

Keep container tightly closed in a dry and well-ventilated place. Avoid contact with water and moisture. Keep away from food, drink and animal feedings. Keep out of the reach of children.

8. Exposure Controls / Personal Protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Calcium oxide (CAS 1305-78-8)	TWA	2 mg/m ³	
Calcium sulfate dihydrate (CAS 13397-24-5)	TWA	10 mg/m ³	Inhalable fraction.
Magnesium oxide (CAS 1309-48-4)	TWA	10 mg/m ³	Inhalable fraction.
Portland cement (CAS 65997-15-1)	TWA	1 mg/m ³	Respirable fraction.
Quartz (CAS 14808-60-7)	TWA	0.025 mg/m ³	Respirable fraction.

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Calcium oxide (CAS 1305-78-8)	PEL	5 mg/m ³	
Calcium sulfate dihydrate (CAS 13397-24-5)	PEL	5 mg/m ³	Respirable fraction.
Limestone (CAS 1317-65-3)	PEL	15 mg/m ³	Total dust.
		5 mg/m ³	Respirable fraction.
Magnesium oxide (CAS 1309-48-4)	PEL	15 mg/m ³	Total dust.
		15 mg/m ³	Total particulate.
Portland cement (CAS 65997-15-1)	PEL	5 mg/m ³	Respirable fraction.
		15 mg/m ³	Total dust.

US. OSHA Table Z-3 (29 CFR 1910.1000)

Components	Type	Value	Form
Portland cement (CAS 65997-15-1)	TWA	50 mppcf	
Quartz (CAS 14808-60-7)	TWA	0.3 mg/m ³	Total dust.
		0.1 mg/m ³	Respirable.
		2.4 mppcf	Respirable.

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value	Form
Calcium oxide (CAS 1305-78-8)	TWA	2 mg/m ³	
Calcium sulfate dihydrate (CAS 13397-24-5)	TWA	10 mg/m ³	
Limestone (CAS 1317-65-3)	TWA	10 mg/m ³	
Magnesium oxide (CAS 1309-48-4)	TWA	10 mg/m ³	Fume.
Portland cement (CAS 65997-15-1)	TWA	10 mg/m ³	
Quartz (CAS 14808-60-7)	TWA	0.025 mg/m ³	Respirable particles.

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value	Form
Calcium oxide (CAS 1305-78-8)	TWA	2 mg/m3	
Calcium sulfate dihydrate (CAS 13397-24-5)	STEL	20 mg/m3	Total dust.
Limestone (CAS 1317-65-3)	TWA	10 mg/m3	Inhalable
	STEL	20 mg/m3	Total dust.
	TWA	3 mg/m3	Respirable fraction.
Magnesium oxide (CAS 1309-48-4)	TWA	10 mg/m3	Total dust.
	STEL	10 mg/m3	Respirable dust and/or fume.
	TWA	3 mg/m3	Respirable dust and/or fume.
Portland cement (CAS 65997-15-1)	TWA	10 mg/m3	Inhalable fume.
	TWA	3 mg/m3	Respirable fraction.
Quartz (CAS 14808-60-7)	TWA	10 mg/m3	Total dust.
	TWA	0.025 mg/m3	Respirable fraction.

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value	Form
Calcium oxide (CAS 1305-78-8)	TWA	2 mg/m3	
Calcium sulfate dihydrate (CAS 13397-24-5)	TWA	10 mg/m3	Inhalable fraction.
Magnesium oxide (CAS 1309-48-4)	TWA	10 mg/m3	Inhalable fraction.
Portland cement (CAS 65997-15-1)	TWA	10 mg/m3	
Quartz (CAS 14808-60-7)	TWA	0.1 mg/m3	Respirable.

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Components	Type	Value	Form
Calcium oxide (CAS 1305-78-8)	TWA	2 mg/m3	
Calcium sulfate dihydrate (CAS 13397-24-5)	TWA	5 mg/m3	Respirable dust.
	TWA	10 mg/m3	Total dust.
Limestone (CAS 1317-65-3)	TWA	10 mg/m3	Total dust.
Magnesium oxide (CAS 1309-48-4)	TWA	10 mg/m3	Fume.
Portland cement (CAS 65997-15-1)	TWA	5 mg/m3	Respirable dust.
	TWA	10 mg/m3	Total dust.
Quartz (CAS 14808-60-7)	TWA	0.1 mg/m3	Respirable dust.

Mexico. Occupational Exposure Limit Values

Components	Type	Value	Form
Calcium oxide (CAS 1305-78-8)	TWA	2 mg/m3	
Calcium sulfate dihydrate (CAS 13397-24-5)	TWA	10 mg/m3	
Limestone (CAS 1317-65-3)	STEL	20 mg/m3	
	TWA	10 mg/m3	
Magnesium oxide (CAS 1309-48-4)	TWA	10 mg/m3	Fume.
Portland cement (CAS 65997-15-1)	STEL	20 mg/m3	
	TWA	10 mg/m3	
Quartz (CAS 14808-60-7)	TWA	0.1 mg/m3	

Exposure guidelines	Occupational exposure to nuisance dust (total and respirable) and respirable crystalline silica should be monitored and controlled.
Engineering controls	Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Ventilation should be sufficient to effectively remove and prevent buildup of any dusts or fumes that may be generated during handling or thermal processing. If engineering measures are not sufficient to maintain concentrations of dust particulates below the Occupational Exposure Limit (OEL), suitable respiratory protection must be worn. If material is ground, cut, or used in any operation which may generate dusts, use appropriate local exhaust ventilation to keep exposures below the recommended exposure limits.
Personal protective equipment	
Eye / face protection	In situations where there is potential splash or puff exposure of cement products, wear safety glasses with side shields or goggles. In extremely dusty or unpredictable environments wear unvented or indirectly vented goggles. Contact lenses should not be worn when working with cement or 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. Where prolonged exposure to unhardened Portland cement products might occur, wear impervious clothing and gloves to prevent skin contact. Wear sturdy boots that are impervious to water and eliminate foot and ankle exposure. Do not rely on barrier crèmes; barrier crèmes should not be used in place of gloves.
Respiratory protection	Avoid tasks which cause dust to become airborne. Use local or general ventilation to control exposure below applicable exposure limits. Use NIOSH/MSHA approved (30 CFR 11) or NIOSH approved (42 CFR 84) respirators in poorly ventilated areas, or if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation.
General hygiene considerations	Periodically wash affected areas contacted by dry or wet cement products with a pH neutral soap. When using, do not eat, drink, or smoke. Wash again at the end of work. If clothing becomes saturated with wet cement products, it should be removed and replaced with clean dry clothing.

9. Physical & Chemical Properties

Appearance	Gray, off-white or white powder.
Physical state	Solid.
Form	Solid.
Color	Gray, off-white, and white.
Odor	Odorless.
Odor threshold	Not available.
pH	12 - 13 In water.
Vapor pressure	Not available.
Vapor density	Not available.
Boiling point	> 1832 °F (> 1000 °C)
Melting point/Freezing point	Not available.
Solubility (water)	Slight (0.1-1%)
Specific gravity	3.15
Flash point	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Auto-ignition temperature	Not available.

10. Chemical Stability & Reactivity Information

Chemical stability	The product is stable under normal conditions of use, storage and transport.
Conditions to avoid	Contact with incompatible materials. Exposure to moisture may affect product quality.
Incompatible materials	Wet material is alkaline and will react with acids, ammonium salts, aluminum and other reactive metals. Hardened material is attacked by hydrofluoric acid releasing toxic silicon tetrafluoride gas.
Hazardous decomposition products	None expected under normal conditions of use.
Possibility of hazardous reactions	Reacts with incompatible materials.

11. Toxicological Information

Sensitization	The product may contain chromates, which may cause an allergic skin sensitization reaction.
Acute effects	Product becomes alkaline when exposed to moisture. Contact with wet concrete can burn skin and eyes. Dust from the dry material can cause irritation and possible burns to the eyes and respiratory tract. Symptoms can be delayed.
Chronic effects	Respirable crystalline silica (quartz) can cause silicosis, a fibrosis (scarring) of the lungs. Some studies show excess numbers of cases of scleroderma, connective tissue disorders, lupus, rheumatoid arthritis, chronic kidney diseases and end-stage kidney disease in workers exposed to respirable crystalline silica. Occupational exposure to respirable dust and respirable crystalline silica should be monitored and controlled. Prolonged or repeated skin contact may produce severe irritation or dermatitis. Inhalation of powder/dust may cause lung edema. Danger of serious damage to health by prolonged exposure.
Carcinogenicity	Cement may contain trace amounts of respirable crystalline silica and hexavalent chromium which are classified by NTP and IARC as known human carcinogens.
ACGIH Carcinogens	
Magnesium oxide (CAS 1309-48-4)	A4 Not classifiable as a human carcinogen.
Portland cement (CAS 65997-15-1)	A4 Not classifiable as a human carcinogen.
Quartz (CAS 14808-60-7)	A2 Suspected human carcinogen.
IARC Monographs. Overall Evaluation of Carcinogenicity	
Hexavalent chromium compounds (CAS -)	1 Carcinogenic to humans.
Quartz (CAS 14808-60-7)	1 Carcinogenic to humans.
US NTP Report on Carcinogens: Known carcinogen	
Hexavalent chromium compounds (CAS -)	Known To Be Human Carcinogen.
Quartz (CAS 14808-60-7)	Known To Be Human Carcinogen.
US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)	
Hexavalent chromium compounds (CAS -)	Cancer hazard.

12. Ecological Information

Ecotoxicological data

Product	Species	Test Results
Portland Cement (cement) (CAS Mixture)		
Aquatic		
Crustacea	EC50	Daphnia
		350 mg/l, 48 hours, estimated
Components	Species	Test Results
Calcium sulfate dihydrate (CAS 13397-24-5)		
Aquatic		
Fish	LC50	Fathead minnow (<i>Pimephales promelas</i>) > 1970 mg/l, 96 hours

Ecotoxicity	Not available.
Environmental effects	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Not available.
Persistence and degradability	Not available.
Bioaccumulation / Accumulation	Not available.

13. Disposal Considerations

Disposal instructions	Dispose in accordance with applicable federal, state, and local regulations. Empty containers may contain product residues. Do not dispose of waste into sewer. This material and its container must be disposed of as hazardous waste.
Waste from residues / unused products	Not applicable.

14. Transport Information

DOT

Not regulated as a hazardous material by DOT.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

TDG

Not regulated as dangerous goods.

15. Regulatory Information**US federal regulations**

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Hexavalent chromium compounds (CAS -) 0.1 % Annual Export Notification required.

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Hexavalent chromium compounds (CAS -)

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

Hexavalent chromium compounds (CAS -) 0.1 % N090

CERCLA (Superfund) reportable quantity (lbs) (40 CFR 302.4)

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)**Hazard categories**

Immediate Hazard - Yes
Delayed Hazard - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance (40 CFR 355, Appendix A)

No

Section 311/312 (40 CFR 370)

No

Drug Enforcement Administration (DEA) (21 CFR 1308.11-15)

Not controlled

Canadian regulations

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS status

Controlled

WHMIS classification

D2A - Other Toxic Effects-VERY TOXIC
E - Corrosive

WHMIS labeling**Inventory status****Country(s) or region****Inventory name****On inventory (yes/no)***

Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	Yes
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s)

State regulations WARNING: This product may contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

US - California Hazardous Substances (Director's): Listed substance

Calcium oxide (CAS 1305-78-8)	Listed.
Hexavalent chromium compounds (CAS -)	Listed.
Magnesium oxide (CAS 1309-48-4)	Listed.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Hexavalent chromium compounds (CAS -)	Listed.
Quartz (CAS 14808-60-7)	Listed.

US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

Hexavalent chromium compounds (CAS -)	Listed: February 27, 1987 Carcinogenic.
Quartz (CAS 14808-60-7)	Listed: October 1, 1988 Carcinogenic.

US - California Proposition 65 - CRT: Listed date/Developmental toxin

Hexavalent chromium compounds (CAS -)	Listed: December 19, 2008 Developmental toxin.
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US - California Proposition 65 - CRT: Listed date/Female reproductive toxin

Hexavalent chromium compounds (CAS -)	Listed: December 19, 2008 Female reproductive toxin.
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US - California Proposition 65 - CRT: Listed date/Male reproductive toxin

Hexavalent chromium compounds (CAS -)	Listed: December 19, 2008 Male reproductive toxin.
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US - New Jersey RTK - Substances: Listed substance

Calcium oxide (CAS 1305-78-8)	Listed.
Calcium sulfate dihydrate (CAS 13397-24-5)	Listed.
Hexavalent chromium compounds (CAS -)	Listed.
Limestone (CAS 1317-65-3)	Listed.
Magnesium oxide (CAS 1309-48-4)	Listed.
Portland cement (CAS 65997-15-1)	Listed.
Quartz (CAS 14808-60-7)	Listed.

US - Pennsylvania RTK - Hazardous Substances: Special hazard

Hexavalent chromium compounds (CAS -)	Special hazard.
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US. Massachusetts RTK - Substance List

Calcium oxide (CAS 1305-78-8)	Listed.
Calcium sulfate dihydrate (CAS 13397-24-5)	Listed.
Limestone (CAS 1317-65-3)	Listed.
Magnesium oxide (CAS 1309-48-4)	Listed.
Portland cement (CAS 65997-15-1)	Listed.
Quartz (CAS 14808-60-7)	Listed.

US. New Jersey Worker and Community Right-to-Know Act

Hexavalent chromium compounds (CAS -)	500 LBS
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US. Pennsylvania RTK - Hazardous Substances

Calcium oxide (CAS 1305-78-8)	Listed.
Calcium sulfate dihydrate (CAS 13397-24-5)	Listed.
Hexavalent chromium compounds (CAS -)	Listed.
Limestone (CAS 1317-65-3)	Listed.
Magnesium oxide (CAS 1309-48-4)	Listed.
Portland cement (CAS 65997-15-1)	Listed.
Quartz (CAS 14808-60-7)	Listed.

16. Other Information

Further information A HMIS® Health rating including an * indicates a chronic hazard.

HMIS® ratings
 Health: 3*
 Flammability: 0
 Physical hazard: 1

NFPA ratings
 Health: 3
 Flammability: 0
 Instability: 1

Disclaimer

The information in the sheet was written based on the best knowledge and experience currently available.