

Safety Data Sheet Portland Cement

Section 1 Identification

GHS product identifier:**Portland Cement**

Chemical name:

Calcium compounds, calcium silicate compounds, and other calcium compounds containing iron and aluminum make up the majority of this product. Major Compounds:

3CaO•SiO₂ Tricalcium silicate2CaO•SiO₂ Dicalcium silicate3CaO•Al₂O₃ Tricalcium aluminate4CaO•Al₂O₃•Fe₂O₃ Tetra calcium aluminoferriteCaSO₄•2H₂O Calcium sulfate dihydrate or Gypsum

Other means of identification:

Cement, hydraulic cement, Portland cement silicate.

Relevant identified uses :

Building materials, construction, a basic ingredient in concrete.

MANUFACTURER:Mitsubishi Cement Corporation
Cushenbury Plant
5808 State Highway 18
Lucerne Valley, CA 92356**TELEPHONE NUMBERS:**

Phone: (760) 248-5184

Fax: (760) 248-5139

Contact Person: David Rib

EMERGENCY TELEPHONE NUMBER: Call 911 for local emergency services.

Section 2 Hazards Identification

Portland cement is a gray or white powder. A single short-term exposure to the dry powder is not likely to cause serious harm.

DANGER! Overexposure to Portland cement can cause serious, potentially irreversible skin or eye damage in the form of chemical (caustic) burns, including third degree burns. The same serious injury can occur if wet or moist skin has prolonged contact exposure to dry Portland cement.**Carcinogenicity.** Portland cement is not classifiable as a human carcinogen by the Occupational Health and Safety Administration (OSHA), the National Toxicity Program (NTP), or the International Agency for Research on Cancer (IARC). However, Portland cement may contain trace amounts of substances listed as carcinogens by NCP, OSHA, or IARC: crystalline silica, chromium VI compounds, nickel compounds, lead compounds. **WARNING:** Crystalline silica, chromium VI compounds, nickel compounds, lead compounds are known to the State of California to cause cancer. (Title 8 CCR 5194(b)(6)(B)-(C).) **Reproductive Toxicity.** **WARNING:** Portland cement may contain trace amounts of nickel and lead compounds. Nickel and lead compounds or substances are known to the State of California to cause birth defects or other reproductive harm. (Title 8 CCR 5194 (b)(6)(B)-(C).)

OSHA/HCS status:

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the California Hazard Communication standard (Title 8 CCR 5194).

Classification:

SKIN CORROSION / IRRITATION — Category 1

SERIOUS EYE DAMAGE / EYE IRRITATION — Category 1 SKIN SENSITIZATION — Category 1

CARCINOGENICITY / INHALATION — Category 1

SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE)

[Respiratory tract irritation] — Category 3`

GHS label elements

Hazard pictograms:



Signal word:

Danger

Hazard statements:

Causes severe skin burns and eye damage.
May cause an allergic skin reaction. May cause respiratory irritation. May cause cancer.

Precautionary statements

Prevention:

Wear protective gloves. Wear eye or face protection. Use only outdoors or in a well-ventilated area. Avoid breathing dust. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Causes eye and skin burns. See Section 4 for additional details. May present risk of engulfment. See Section 7 for additional details. Overexposure to wet cement can cause severe skin damage in the form of chemical burns, including third degree burns. The same severe injury can occur if wet or moist skin is exposed to dry Portland cement. Clothing wet with moisture from cement can transmit the caustic effects to the skin, causing chemical burns. Portland cement causes skin burns with little warning; discomfort or pain cannot be relied upon to alert a person to a serious injury. You may not feel pain or the severity of the burn until hours after the exposure.

MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED BY EXPOSURE: Contact with wet cement may aggravate existing skin conditions. Sensitivity to hexavalent chromium can be aggravated by exposure.

Response:

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Prolonged and repeated inhalation of respirable crystalline silica-containing dust in excess of appropriate exposure limits has caused silicosis, fibrosis or scar tissue formations in the lungs. Call a POISON CENTER or physician if you feel unwell. **IF ON SKIN:** Wash with plenty of pH neutral soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse. If skin irritation or rash occurs: get medical attention. Portland cement may contain trace amounts of hexavalent chromium. Hexavalent chromium is associated with allergic skin reactions which may appear as contact dermatitis and skin ulcerations. Persons already sensitized may react to their first exposure to cement. Other individuals may develop allergic dermatitis after repeated exposure to cement. The symptoms of allergic reactions may include reddening of the skin, rash, and irritation. Symptoms of chronic exposure to wet cement may include reddening, irritation, and eczematous rashes. Drying, thickening, and cracking of the skin and nails may also occur. **IF IN EYES:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Exposure to dust may cause immediate or delayed irritation or inflammation. Eye contact by larger amount of dry power or splashes of wet Portland cement may cause effects ranging from moderate eye irritation to chemical burns or blindness. Immediately call a POISON CENTER or physician. **IF INGESTED:** Irritating to mouth, throat and stomach. Ingestion of large quantities may cause severe irritation and chemical burns of the mouth, throat, stomach and digestive tract. Do not ingest Portland cement. Get immediate medical attention.

Storage:

Keep container tightly closed in a dry and well-ventilated area.

Disposal:

Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified: Not applicable.

Section 3 Composition/information on ingredients

Substance/mixture:

Mixture

Chemical name:

Calcium compounds, calcium silicate compounds, and other calcium compounds containing iron and aluminum make up the majority of this product.

Other means of identification:

Cement, hydraulic cement, Portland cement silicate

CAS number/other identifiers

CAS number: 65997-15-1
Product code: Not available.

Ingredient name	%	CAS number
Portland Cement (main compounds listed in Section 1)	100%	65997-15-1
The structure of Portland cement may contain the following in some concentration ranges:		
Calcium oxide	0 – 2.0	1305-78-8
Crystalline Silica (Quartz)	0 – 0.3	14808-60-7
Hexavalent chromium*	0 – 0.003	18450-29-9
Portland cement also contains gypsum, limestone and magnesium oxide in various concentrations. However, because these components are not classifiable as a hazard under Title 29 <u>Code of Federal Regulations</u> 1910.1200, they are not required to be listed in		
Gypsum (Calcium Sulfate)	1 - 4	13397-24-5
Limestone (Calcium Carbonate)	0 - 20	1317-65-3
Magnesium oxide	2 - 4	1309-48-4

Concentrations shown as a range is due to raw material and process variations.

*Hexavalent chromium is included due to dermal sensitivity associated with the component.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4 First aid measures

Description of necessary first aid measures

- Eye contact:** Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 20 minutes. Chemical burns must be treated promptly by a physician.
- Inhalation:** Seek medical help if coughing or other symptoms persist. Inhalation of large amounts of Portland cement requires immediate medical attention. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If the individual is not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.
- Skin contact:** Get medical attention immediately. Heavy exposure to Portland cement dust, wet concrete or associated water requires prompt attention. Quickly remove contaminated clothing, shoes, and leather goods such as watchbands and belts. Quickly and gently blot or brush away excess Portland cement. Immediately wash thoroughly with lukewarm, gently flowing water and non-abrasive pH neutral soap. Seek medical attention for rashes, burns, irritation, dermatitis and prolonged unprotected exposures to wet cement, cement mixtures or liquids from wet cement. Burns should be treated as caustic burns. Portland cement causes skin burns with little warning. Discomfort or pain cannot be relied upon to alert a person to a serious injury. You may not feel pain or the severity of the burn until hours after the exposure. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure.
- Ingestion:** Get medical attention immediately. Call a poison center or physician. Have victim rinse mouth thoroughly with water. **DO NOT INDUCE VOMITING** unless directed to do so by medical personnel. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Have victim drink 60 to 240 mL (2 to 8 oz.) of water. Stop giving water if the exposed person feels sick as vomiting may be dangerous. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway.

Most important symptoms/effects, acute and delayed potential acute health effects

Eye contact:	Causes serious eye damage.
Inhalation:	May cause respiratory irritation.
Skin contact:	Causes severe burns. May cause an allergic skin reaction.
Ingestion:	May cause burns to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact:	Adverse symptoms may include the following: pain, watering and redness
Inhalation:	Adverse symptoms may include the following: respiratory tract irritation and coughing
Skin contact:	Adverse symptoms may include the following: pain or irritation, redness and blistering may occur, skin burns, ulceration and necrosis may occur
Ingestion:	Adverse symptoms may include the following: stomach pains

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician:	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments:	Not applicable.
Protection of first-aiders:	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5 Fire-fighting measures

Extinguishing media

Suitable extinguishing media:	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media:	Do not use water jet or water-based fire extinguishers.
Specific hazards arising from Hazardous thermal	No specific fire or explosion hazard.
Hazardous thermal decomposition products:	may include the following materials: carbon dioxide, carbon monoxide, sulfur decomposition oxides and metal oxide/oxides
Special protective actions for fire-exposed fire-fighters:	Move containers from fire area if this can be done without risk. Use water spray to keep containers cool.
Special protective equipment for fire-fighters:	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders: For personal protective clothing requirements, please see Section 8.
- Environmental precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has entered the environment, including waterways, soil or air. Materials can enter waterways through drainage systems.

Methods and materials for containment and cleaning up

- Small spill: Move containers from spill area. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Place spilled material in a designated, labeled waste container. Dispose of waste material by using a licensed waste disposal contractor.
- Large spill: Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place dust in a closed, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Large spills to waterways may be hazardous due to alkalinity of the product. Dispose of waste material using a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7 Handling and storage

Precautions for safe handling

- Protective measures: Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Avoid exposure by obtaining and following special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe dust. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material and keep the container tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene: Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating. See also Section 8 for additional information on hygiene measures.
- Conditions for safe storage, including any incompatibilities: A key to using the product safely requires the user to recognize that Portland cement reacts chemically with water to produce calcium hydroxide which can cause severe chemical burns. Every attempt should be made to avoid skin and eye contact with cement. Do not get Portland cement inside boots, shoes or gloves. Do not allow wet, saturated clothing to remain against the skin. Promptly remove clothing and shoes that are dusty or wet with cement mixtures. Launder/clean clothing and shoes before reuse. Do not enter a confined space that stores or contains Portland cement unless appropriate procedures and protection are available. Portland cement can build up or adhere to the walls of a confined space and then release or fall suddenly (engulfment).

Section 8 Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Cement, Portland, chemicals	ACGIH TLV (United States, 3/2012). TWA: 1 mg/m ³ 8 hours. Form: Respirable fraction NIOSH REL (United States, 6/2009). TWA: 5 mg/m ³ 10 hours. Form: Respirable fraction TWA: 10 mg/m ³ 10 hours. Form: Total OSHA PEL (United States, 6/2010). TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction TWA: 15 mg/m ³ 8 hours. Form: Total dust
Calcium oxide	ACGIH TLV (United States, 3/2012). TWA: 2 mg/m ³ 8 hours. NIOSH REL (United States, 6/2009). TWA: 2 mg/m ³ 10 hours. OSHA PEL (United States, 6/2010). TWA: 5 mg/m ³ 8 hours.
Limestone	NIOSH REL (United States, 6/2009). TWA: 5 mg/m ³ 10 hours. Form: Respirable fraction TWA: 10 mg/m ³ 10 hours. Form: Total OSHA PEL (United States, 6/2010). TWA: 5 mg/m ³ 8 hours. Form: Respirable fraction TWA: 15 mg/m ³ 8 hours. Form: Total dust
Magnesium oxide	ACGIH TLV (United States, 3/2012). TWA: 10 mg/m ³ 8 hours. Form: Inhalable fraction OSHA PEL (United States, 6/2010). TWA: 15 mg/m ³ 8 hours. Form: Total particulates
Quartz	ACGIH TLV (United States, 3/2012). TWA: 0.025 mg/m ³ 8 hours. Form: Respirable fraction NIOSH REL (United States, 6/2009). TWA: 0.05 mg/m ³ 10 hours. Form: respirable dust OSHA PEL Z-3 (United States, 9/2005). TWA: 10mg/m ³ divided by %SiO ₂ + 2: Respirable TWA: 30mg/m ³ divided by %SiO ₂ + 2: Total
Calcium sulfate (gypsum)	ACGIH TLV (United States, 3/2012) TWA: 10 mg/m ³ 8 hours. Form: Respirable fraction NIOSH REL (United States, 6/2009) TWA 5 mg/m ³ 8 hours. Form: Respirable fraction TWA 10 mg/m ³ 8 hours. Form: Total dust OSHA PEL Z-1 (United States, 2/2006) TWA 5 mg/m ³ 8 hours. Form: Respirable fraction TWA 15 mg/m ³ 8 hours. Form: Total dust

Appropriate engineering controls: Use only with adequate ventilation. If user operations generate dust, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

Individual protection measures

Hygiene measures:	Clean water should always be readily available for skin and (emergency) eye washing. Periodically wash areas contacted by Portland cement with a pH neutral soap and clean, uncontaminated water. If clothing becomes saturated with Portland cement, garments should be removed and replaced with clean, dry clothing.
Eye/face protection:	To prevent eye contact, wear safety glasses with side shields, safety goggles or face shields when handling dust or wet cement. Wearing contact lenses when working with cement is not recommended.

Skin protection

Hand protection:	Use impervious, waterproof, abrasion and alkali-resistant gloves. Do not rely on barrier creams in place of impervious gloves. Do not get Portland cement inside gloves.
Body protection:	Use impervious, waterproof, abrasion and alkali-resistant boots and protective long-sleeved and long-legged clothing to protect the skin from contact with wet Portland cement. To reduce foot and ankle exposure, wear impervious boots that are high enough to prevent Portland cement from getting inside them. Do not get Portland cement inside boots, shoes, or gloves. Remove clothing and protective equipment that becomes saturated with cement and immediately wash exposed areas of the body.
Other skin protection:	Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved. Footwear and other gear to protect the skin should be approved by a specialist before handling this product.
Respiratory protection:	Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product, and assigned protection factor of the selected respirator.

Section 9 Physical and chemical properties

Appearance

Physical State:	Solid. [Powder.]	Lower and upper explosive (flammable) limits:	Not applicable.
Color:	Gray or white.	Vapor pressure:	Not applicable.
Odor:	Odorless.	Vapor density:	Not applicable.
Odor threshold:	Not available.	Relative density:	2.3 to 3.1
pH:	>11.5 [Conc. (% w/w): 1%]	Solubility	Slightly soluble in water.
Melting point:	>1000°C (>1832°F)	Solubility in water:	0.1 to 1%
Boiling point:	>1000°C (>1832°F)	Partition coefficient: n-octanol/water:	Not applicable.
Flash point:	Not flammable	Auto-ignition temperature:	Not applicable.
Burning time:	Not available	Decomposition temperature:	Not available.
Burning rate:	Not available.	SADT:	Not available.
Evaporation rate:	Not applicable.	Viscosity:	Not applicable.
Flammability (solid, gas):	Not applicable.		

Section 10 Stability and reactivity

Reactivity:	Reacts slowly with water forming hydrated compounds, releasing heat and producing a strong alkaline solution until reaction is substantially complete.
Chemical stability:	The product is stable.
Possibility of hazardous reactions:	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid:	No specific data.

Incompatible materials: Reactive or incompatible with the following materials: oxidizing materials, acids, aluminum and ammonium salt. 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. Reacts with acids, aluminum metals and ammonium salts. Aluminum powder and other alkali and alkaline earth elements will react in wet mortar or concrete, liberating hydrogen gas. Limestone ignites on contact with fluorine and is incompatible with acids, alum, ammonium salts, and magnesium. Silica reacts violently with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride yielding possible fire and/or explosions. Silicates dissolve readily in hydrofluoric acid producing a corrosive gas — silicon tetrafluoride.

Hazardous decomposition products: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11 Toxicological information

Information on toxicological effects

Acute toxicity: Portland Cement LD50/LC50 = Not available

Irritation/Corrosion: Skin: May cause skin irritation. May cause serious burns in the presence of moisture.

Eyes: Causes serious eye damage. May cause burns in the presence of moisture.

Respiratory: May cause respiratory tract irritation.

Sensitization: May cause sensitization due to the potential presence of trace amounts of hexavalent chromium.
Mutagenicity: There are no data available.

Carcinogenicity: Portland cement is not classifiable as a human carcinogen by OSHA, NTP, or IARC. However, Portland cement may contain trace amounts of substances listed as carcinogens by NCP, OSHA, or IARC: crystalline silica, chromium VI compounds, nickel compounds, lead compounds. Crystalline silica, chromium VI compounds, nickel compounds, lead compounds are known to the State of California to cause cancer. (Title 8 CCR 5194(b)(6)(B)-(C).)

Classification

Product/ingredient name	OSHA	IARC	ACGIH	NTP
Cement, Portland, chemicals	—	—	A	—
Quartz	—	1	4	Known to be a human carcinogen.

Reproductive Toxicity: Portland cement may contain trace amounts of nickel and lead compounds. Nickel and lead compounds or substances are known to the State of California to cause birth defects or other reproductive harm. (Title 8 CCR 5194 (b)(6)(B)-(C).)

Teratogenicity: There are no data available.

Specific target organ toxicity (single exposure)

Name	Category	Route of Exposure	Target Organs
Calcium oxide	Category 3	Inhalation and skin contact	Respiratory tract irritation, skin
Cement, Portland, chemicals	Category 3	Inhalation and skin contact	irritation Respiratory tract irritation,

Specific target organ toxicity (repeated exposure)

Name	Category	Route of Exposure	Target Organs
Quartz	Category 1	Inhalation	Respiratory tract and kidneys

Aspiration hazard: There are no data available.

Information on the likely routes of exposure

Dermal contact. Eye contact. Inhalation. Ingestion.

Potential acute health effects:	<p>Eye contact: Causes serious eye damage.</p> <p>Inhalation: May cause respiratory irritation.</p> <p>Skin contact: Causes severe burns. May cause an allergic skin reaction.</p> <p>Ingestion: May cause burns to mouth, throat and stomach.</p>
Symptoms related to the physical, chemical and toxicological characteristics:	<p>Eye contact: Adverse symptoms may include the following: pain, watering, redness</p> <p>Inhalation: Adverse symptoms may include the following: respiratory tract irritation, coughing</p> <p>Skin contact: Adverse symptoms may include the following: pain or irritation, redness, blistering may occur, skin burns, ulcerations and necrosis may occur</p> <p>Ingestion: Adverse symptoms may include the following: stomach pains</p>
Delayed and immediate effects and also chronic effects from short and long term exposure:	<p>Short term exposure:</p> <p>Potential immediate effects: No known significant effects or critical hazards.</p> <p>Potential delayed effects: No known significant effects or critical hazards.</p> <p>Long term exposure:</p> <p>Potential immediate effects: No known significant effects or critical hazards.</p> <p>Potential delayed effects: No known significant effects or critical hazards.</p>
Potential chronic health effects:	<p>General: Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation. If sensitized to hexavalent chromium, a severe allergic dermal reaction may occur when subsequently exposed to very low levels.</p> <p>Carcinogenicity: Portland cement is not classifiable as a human carcinogen. Crystalline silica is considered a hazard by inhalation. IARC has classified crystalline silica as a Group 1 substance, carcinogenic to humans. This classification is based on the findings of laboratory animal studies (inhalation and implantation) and epidemiology studies that were considered sufficient for carcinogenicity. Excessive exposure to crystalline silica can cause silicosis, a non-cancerous lung disease.</p> <p>Reproductive toxicity: Portland cement may contain trace amounts of nickel and lead compounds. Nickel and lead compounds or substances are known to the State of California to cause birth defects or other reproductive harm. (Title 8 CCR 5194 (b)(6)(B)-(C).)</p> <p>Mutagenicity: No known significant effects or critical hazards.</p> <p>Teratogenicity: No known significant effects or critical hazards.</p>
Numerical measures of toxicity:	<p>Acute toxicity estimates: There are no data available.</p>

Section 12 Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
Calcium oxide	Chronic NOEC 100 mg/L Fresh water	Fish—Oreochromis niloticus— Juvenile (Fledgling, Hatchling, Weanling)	46 days

Persistence and degradability:	There are no data available.
Bioaccumulative potential:	There are no data available.
Mobility in soil:	Soil/water partition coefficient (Koc): Not available.
Other adverse effects:	No known significant effects or critical hazards.

Section 13 Disposal considerations

Disposal methods: The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Untreated waste should not be released to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe manner. Care should be taken when handling empty containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff, and contact with soil, waterways, drains and sewers. . If Portland cement as supplied becomes a waste, it does not meet the criteria of a hazardous waste as defined under the Resource Conservation and Recovery Act (RCRA) 42 U.S.C. §6903 and 40 CFR 261.

Section 14 Transport information

	DOT Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	—	—	—
Transport hazard class(es)	—	—	—
Packing group	—	—	—
Environmental hazards	None.	None.	None.
Additional information	—	—	—

Special precautions for user: Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not available.

Section 15 Regulatory information

U.S. Federal regulations: TSCA 6 final risk management: Chromium, ion (Cr6+)

United States inventory (TSCA 8b): Portland cements are considered to be statutory mixtures under TSCA. CAS 65997-15-1 is included on the TSCA inventory.

Clean Water Act (CWA) 307: Chromium, ion (Cr6+)

CERCLA: This product is not listed as a CERCLA substance.

Clean Air Act Section 112 (b): Hazardous Air Pollutants (HAPs) — Not listed

Clean Air Act Section 602: Class I Substances — Not listed

Clean Air Act Section 602: Class II Substances — Not listed

DEA List I Chemicals: (Precursor Chemicals) — Not listed

DEA List II Chemicals: (Essential Chemicals) — Not listed

SARA 311/312

Classification: Immediate (acute) health hazard
Delayed (chronic) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Calcium oxide	A-B	No.	No.	No.	Yes.	No.
Quartz	< 0.2	No.	No.	No.	No.	Yes.
Chromium, ion (Cr6+)	< 0.1	No.	No.	No.	Yes.	Yes.
Nickel Compounds	< 0.1	No.	No.	No.	Yes.	Yes.
Lead (Organic & Inorganic)	< 0.1	No.	No.	No.	No.	Yes.

SARA 313

	Product name	CAS number	%
Form R—Reporting requirements	Chromium, ion (Cr6+)	8540-29-9	< 0.1
	Lead (Organic or Inorganic)	—	< 0.1
	Nickel Compounds	—	< 0.1
Supplier notification	Alternatively, if any of the compounds are not present, state: This product does not contain any constituents listed under SARA Title III Section 313.		

State regulations

Massachusetts: The following components are listed: cement, Portland, chemicals, limestone
New York: None of the components are listed.
New Jersey: The following components are listed: cement, Portland, chemicals, gypsum, limestone
Pennsylvania: The following components are listed: cement, Portland, chemicals, gypsum, limestone

California Prop. 65

WARNING: 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.

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
Quartz	Yes.	No.	No.	No.
Chromium, ion (Cr6+)	Yes.	Yes.	0.001 µg/day (inhalation)	8.2 micrograms/day (ingestion)
Nickel Compounds	No.	No.	No.	No.
Lead	Yes.	Yes.	15 µg/day (ingestion)	0.5 micrograms/day (inhalation)

International regulations

International lists: Canadian Domestic Substances List (DSL): Portland cement is included on the DSL.
Mexico Inventory (INSQ): All components are listed or exempted.

Section 16 Other information

History

Date of issue mm/dd/yyyy: 05/20/2015
Version: 1
Revised Section(s): Not applicable.

Notice to reader DISCLAIMER:

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 the 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. **SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY MITSUBISHI CEMENT CORPORATION** except that the product shall conform to contracted specifications. The information provided herein was believed by MITSUBISHI CEMENT CORPORATION to be accurate at the time of preparation or prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information to comply with all laws and procedures applicable to the safe handling and use of product and to determine the suitability of the product for its intended use. Buyer's exclusive remedy shall be for damages and no claim of any kind, whether as to product delivered or for non-delivery of product, and whether based on contract, breach of warranty, negligence, or otherwise shall be greater in amount than the purchase price of the quantity of product in respect of which damages are claimed. In no event shall Seller be liable for incidental or consequential damages, whether Buyer's claim is based on contract, breach of warranty, negligence or otherwise.

Abbreviations

- ACGIH — American Conference of Governmental Industrial Hygienists
- CAS — Chemical Abstract Service
- CERCLA — Comprehensive Emergency Response and Comprehensive Liability Act
- CFR — Code of Federal Regulations
- DOT — Department of Transportation
- GHS — Globally Harmonized System
- HEPA — High Efficiency Particulate Air
- IATA — International Air Transport Association
- IARC — International Agency for Research on Cancer
- IMDG — International Maritime Dangerous Goods
- NIOSH — National Institute of Occupational Safety and Health
- NOEC — No Observed Effect Concentration
- NTP — National Toxicology Program
- OSHA — Occupational Safety and Health Administration
- PEL — Permissible Exposure Limit
- REL — Recommended Exposure Limit
- RQ — Reportable Quantity
- SARA — Superfund Amendments and Reauthorization Act
- SDS — Safety Data Sheet
- TLV — Threshold Limit Value
- TPQ — Threshold Planning Quantity
- TSCA — Toxic Substances Control Act TWA — Time-Weighted Average
- UN — United Nations