

PORTLAND CEMENT

MSDS No. HRC001

SECTION 1: Identification of the Material and Supplier

Company details: HR Cement Limited
60 Aerodrome Road
Mt Maunganui 3116

Tel: +64 7 575 8864
Fax: +64 7 575 8864
Email: chris.hall@hrcl.co.nz

Emergency: 0800 764 766 (0800 POISON) 24 hours

Product: Portland Cement

CAS Number: 65997-15-1

Use: Portland Cement is used as a binder in concrete, concrete masonry, mortar and grouts. It is also used in the manufacture of fibre cement products, in soil stabilisation in building construction and civil engineering projects.

Other Names: General purpose cement

SECTION 2: Hazards Identification

Hazardous Classification: Hazardous substance (Hazardous substances regulations 2001).
Non-dangerous good.

HSNO Approval Number: HSR002544 (Group Standard 2006 – Construction)

Hazard Classification:

- 6.3A Skin irritant
- 6.9B Target organic toxicant
- 8.3A Eye corrosive



- Hazard Statements:**
- H315** Irritating in contact with skin. Repeated exposure may cause skin dryness or cracking. May cause sensitisation by skin contact.
 - H363** Harmful by inhalation and if swallowed.
 - H318** Irritating to eyes

SECTION 3: Composition / Information on Ingredients

Portland Cement consists of a crystalline mass manufactured from substances mined from the earth's crust. It contains trace amounts of naturally occurring, but potentially hazardous chemical entities including metals such as chromium and nickel, crystalline silica, potassium sulphate, calcium / magnesium oxides and nickel compounds.

All significant constituents are listed below:

Chemical Entity	Proportion	CAS Number
Portland Cement Clinker (consisting of)	<97%	65997-15-1
3CaO.SiO ₂		12168-85-3
2CaO.SiO ₂		1344-95-2
3CaO.Al ₂ O ₃		12042-78-3
4CaO.Al ₂ O ₃ .Fe ₂ O ₃		12068-35-8
Crystalline Quartz	<1%	14808-60-7
Hexavalent Chrome (Cr VI)	<20ppm	18540-29-9
Gypsum (CaSO ₄ .2H ₂ O)	2-5%	13397-24-5
Calcium Oxide (CaO)	1-3%	1305-78-8

SECTION 2: Hazards Identification

- Swallowed:** Rinse mouth and lips with water. Do not induce vomiting. Give water to drink to dilute stomach contents. If symptoms persist, seek medical attention.
- Eyes:** Flush thoroughly with flowing water for 15 minutes to remove all traces. If symptoms such as irritation or redness persist, seek medical attention. If wet cement is splashed in the eye, always treat as above, and seek urgent medical attention.
- Skin:** Remove heavily contaminated clothing immediately. Wash off skin thoroughly with water. Use a mild soap if available. Shower if necessary. Seek medical attention for persistent irritation or burning of the skin.

- Inhaled:** Remove to fresh air, away from dusty area. If symptoms persist, seek medical attention.
- First Aid Facilities:** Eye wash station. Washing facilities with running water.
- Advice to Doctor:** For advice contact the National Poisons Centre 0800 POISON (0800 764 766) or a doctor. Treat symptomatically. Wet cement burns to skin or eye may result in corrosive caustic burns. Ingestion of significant amounts of cement dry or wet is unlikely. Do not induce emesis or perform gastric lavage. Neutralization with acidic agents is not advised because of increased risks of exothermic burns. Water-mineral oil soaks may aid in removing hardened cement from the skin. Ophthalmological opinion should be sought for ocular burns.

SECTION 5: Fire Fighting Measures

- Fire/Explosion Hazard:** None
- Flammability** Not flammable
- Extinguishing Media:** None required
- Hazards from Combustion Products:** None
- Special Protective Precautions:** None required

SECTION 6: Accidental Release Measures

- Spills:** Spills are best cleaned up by vacuum device to avoid generating airborne dust. Recommendations on Exposure Control and Personal Protection should be followed during spill clean-up. Keep product out of storm water and sewer drains. Wetting during clean-up will cause formation of setting cement.

SECTION 7: Handling and Storage

- Precautions:** Do not breathe dust. Wear protective gloves, eye and face protection.
- Handling:** When supplied in bags these need to be handled in accordance with manual handling Regulations and Code of Practice. Avoid contact with eyes. Wear eye protection. Avoid skin contact and inhalation. Wash exposed skin thoroughly after handling.
- Storage:** Protect from moisture to prevent hardening. Storage of cement may be in concrete silos, steel bins, or plastic lined multi-wall paper bags. Ensure packages are adequately labeled, sealed and protected from physical damage. Store in cool, dry, well ventilated area. Avoid contact with oxidising agents, acids, ethanol and halogens.

SECTION 7: Exposure Control / Personal Protection**Workplace Exposure Limits:**

Exposure to dust should be kept as low as practicable, and below the following levels:

Portland Cement: 10mg/m³ TWA (time-weighted average) as inspirable dust.

Crystalline silica (quartz): 0.1 mg/m³ TWA as respirable dust
(7 microns particle equivalent aerodynamic diameter).

Chromium VI (hexavalent): 0.05 mg/m³.

Outside Workplace Exposure Limits:

No TEL or EEL is set for this substance at this time.

Engineering controls:

All work with dry cement should be carried out in such a way as to minimise dust generation, exposure to dust and repeated or extended skin contact. When handling dry cement, use local mechanical ventilation or extraction in areas where dust could escape into the work environment. For bulk deliveries, closed pumping systems are recommended. For handling of individual bags, follow instructions below if no local exhaust ventilation is available. Local dust extraction and collection may be used, if necessary, to control airborne dust levels. Work methods and engineering should aim to minimise contact with wet cement onto exposed skin. Work areas should be cleaned regularly.

Skin Protection:

Minimise contact with Portland Cement materials. When handling dry or wet cement, wet concrete, mortar or grout, personnel should wear protective clothing and impervious footwear, and gloves such as PVC (see Australian and New Zealand Standards AS/NZS 4501 and AS 2161). Never kneel in wet cement, or allow extended contact of skin with wet cement.

Remove clothing which has become contaminated with wet or dry cement to avoid prolonged contact with the skin. If cement gets into boots, remove socks and boots immediately and wash skin thoroughly. Wash work clothes regularly. To avoid contamination of face and lips and ingestion, wash hands before eating or smoking.

Eye Protection:

Splash resistant safety glasses with side shields or safety goggles (AS/NZ 1336) or a face shield should be worn to ensure all contact with eyes is avoided.

Respiratory Protection:

Where engineering and handling controls are not adequate to minimise exposure to total dust and to respirable crystalline silica wear a suitable P1 or P2 particulate respirator (AS/NZS 1715 and AS/NZS 1716). Use only respirators that bear the New Zealand Standards mark and are fitted and maintained correctly. For dust levels approaching or exceeding the NES (see above) a more effective particulate respirator as described in AS/NZS 1715 should be worn. Procedures for effective use of respirators should be applied and supervised.

SECTION 9: Physical and Chemical Properties

Appearance:	A fine grey powder
Odour:	No distinctive odour
Boiling/Melting Point:	Melting point >1200oC
Vapour Pressure:	Not applicable
Specific Gravity:	3.0 – 3.2
Flash Point:	Not applicable
Flammability Limits:	Not applicable
Solubility In Water:	Slight, reacts on mixing with water forming an alkaline (caustic) solution (pH >11)
Particle Size:	Up to 50% of the fresh dry material may be respirable (below 10 microns)

SECTION 10: Stability and Reactivity

Chemical Stability:	Chemically stable
Conditions to Avoid:	Keep free of moisture
Incompatible Materials:	None
Hazardous Decomposition Products:	None
Hazardous Reactions:	None

SECTION 11: Toxicological Information

Portland Cements are stable substances, compatible with most other building materials, will not decompose into hazardous by-products and do not polymerise.

Short Term (Acute) Exposure

- Swallowed:** Unlikely under normal industrial use. Mildly abrasive and corrosive to mouth and throat if swallowed. May cause nausea, stomach cramps and constipation.
- Eyes:** Irritating and corrosive to the eyes and may cause alkaline burns. Cement dust is irritating to the eyes. Exposure to dust may aggravate existing eye irritations.
- Skin:** Dust is irritating and drying to the skin. Direct contact with wet cement may cause serious skin burns. Within 12 to 48 hours (after one- to six-hour exposures) possible first, second or third degree burns may occur. There may be no obvious pain at the time of the exposure. Chronic skin disorders may be aggravated by exposure to dust or contact with wet cement.
- Inhaled:** Cement dust is irritating to the nose, throat and respiratory tract causing coughing and sneezing. Pre-existing upper respiratory and lung diseases including asthma and bronchitis may be aggravated.

Long Term (Chronic) Exposure

- Eyes:** Dust may cause irritation and inflammation of the cornea.
- Skin:** Repeated contact causes irritation and drying of the skin and can result in skin reddening and skin rash (dermatitis). Over time this may become chronic and can also become infected. Persons who are allergic to chromium may develop an allergic dermatitis which aggravates the irritant effects and this combination can lead to chronic cement dermatitis and serious disability particularly affecting the hands.
- Inhaled:** Repeated exposure to the dust may result in increased nasal and respiratory secretions and coughing. Inflammation of lining tissue of the respiratory system may follow repeated exposure to high levels of dust, with increased risk of bronchitis and pneumonia.

Repeated and prolonged exposure to dust levels which exceed the OES for crystalline silica (see above) may occur. This can cause bronchitis, and silicosis (scarring of the lung). Long term overexposure to respirable crystalline silica dust may increase the risk of other irreversible and serious disorders including scleroderma (a disease affecting the connective tissue of the skin, joints, blood vessels and internal organs).

Cement (Portland Cement) is not classified as a carcinogen by NOHSC. Of the ingredients Hexavalent Chromium (Cr VI) is classified as a carcinogen by NOHSC. There is debate in the medical literature concerning whether there is any risk of lung cancer arising from long term high overexposure to respirable crystalline silica. Risk of lung cancer has not been identified from using Portland Cements containing silica. The International Agency for Research on Cancer (IARC) has classified crystalline silica, inhaled in the form of quartz or cristobalite from occupational sources, as carcinogenic to humans (Group 1). NOHSC has not classified crystalline silica as a carcinogen.

SECTION 12: Ecological Information

Classified as an aquatic ecotoxic under the Hazardous Substances and New Organisms Act.
Classified as non-toxic in soils or to terrestrial vertebrates / invertebrates

Ecotoxicity: Product forms an alkaline slurry when mixed with water.

Persistence and Degradability: Product is persistent and would have a low degradability.

Mobility: A low mobility would be expected in a landfill situation.

SECTION 13: Disposal Considerations

Portland Cement can be treated as a common waste for disposal or dumped into a landfill site, in accordance with local authority guidelines.

Keep material out of storm water and sewer drains.

Measures should be taken to prevent dust generation during disposal, and exposure and personal precautions should be observed (see above).

SECTION 14: Transport Information

Transportation is done in bulk or bag form by Ship, Rail and Road.

UN Number: None allocated

Proper Shipping Name: None allocated

Class and Subsidiary Risk: None allocated

Packing Group: None allocated

Special precautions for user: Avoid generating and breathing dust

Hazchem Code: None allocated

SECTION 15: Regulatory Information

ERMA Approval Code: HSR002544

Classified under the group standard: Construction (Subsidiary Hazards) Group Standard 2006.
For full listings of controls see www.ermanz.govt.nz - Group Standards

SECTION 16: Additional Information

Although reasonable care has been taken in the preparation of this document, HR Cement extends no warranties and makes no representations as to the accuracy or completeness of the information contained therein, and assumes no responsibility regarding the suitability of this information for the user's intended purposes or for the consequence of its use.

Each individual should make a determination as to the suitability of the information for their particular purpose (s).

Next Review Date: 31 December 2018

Australian and New Zealand Standards:

AS 2161: Industrial Safety Gloves and Mittens (excluding electrical and medical gloves).

AS/NZ 1336: Recommended Practices for Occupational Eye Protection.

AS/NZS 1715: Selection, use and maintenance of respiratory protective devices.

AS/NZS 1716: Respiratory protective devices.

AS/NZS 4501: Occupational protective clothing.