

### 1. Identification of the substance/preparation and of the company/undertaking

#### 1.1 Identification of the substance/preparation

##### Portland Cement (CEM I)

#### 1.2 Use of the substance/preparation

Cement is used as an hydraulic binder for the production of concrete, mortars, grouts, etc.

#### 1.3 Company identification

Company name: Premier Cement Ltd.

Address: Shed E,  
Kings Dock,  
Swansea,  
SA1 8QT,  
Swansea Terminal

Telephone number: +44 1792 645302

E-mail of responsible person for SDS:  
rbradley@irishcement.ie

#### 1.4 Emergency telephone

Emergency telephone number: +44 1792 645302

Available outside office hours? No

### 2. Hazard Identification

When cement reacts with water a strong alkaline solution is produced.

#### 2.1 Hazard characterisation

Xi Irritant

R37/38 Irritating to respiratory system and skin

R41 Risk of serious damage to eyes

R43 May cause sensitisation by skin contact

#### 2.2 Primary route(s) of entry

Inhalation: Yes

Skin - eyes: Yes

Ingestion: No, except in accidental cases

#### 2.3 Human health

**Inhalation:** Frequent inhalation of large quantities of cement dust over a long period of time increases the risk of developing lung diseases.

**Eyes:** Eye contact with cement (dry or wet) may cause serious injury.

**Skin:** Cement may have an irritating effect on moist skin (due to transpiration or humidity) after prolonged contact.

Prolonged skin contact with wet cement or wet concrete may cause serious burns because they develop without pain being felt (for example when kneeling in wet concrete even when wearing trousers).

Repeated skin contact with wet cement may cause contact dermatitis.

*For more details see reference (1).*

#### 2.4 Environment

Under normal use, the product is not expected to be hazardous to the environment.

#### 2.5 Further information

The content of sensitising soluble chromium (VI) is reduced to below 0.0002% for the period noted on bags/delivery documentation in accordance with the legislation specified under heading 15.



### 3. Composition/Information on Ingredients

#### 3.1 Chemical composition

##### CEM 1

	Concentration %	EINECS
Portland Cement Clinker	90 - 95%	266-043-4
Limestone/Shale	0 - 5%	215-279-6/ 310-127-6
Calcium Sulphate	0 - 5%	231-900-3
Tin Sulphate	< 1%	231-302-2
Ferrous Sulphate	<1%	231-753-5

#### 3.2 Components presenting a health hazard

Consists predominantly of calcium silicate, calcium aluminates and ferro-aluminates and sulphates. Small amounts of alkalis, lime, magnesia and chlorides are present with trace amounts of chromium compounds. Tin or ferrous sulphate are also present in small quantities as chromate reducing agents.

##### ALL CEMENTS

	Concentration %	EINECS	Symbol	R
Portland Cement Clinker	80 - 95%	266-043-4	Xi	R37/38 R41 R43

### 4. First Aid Measures

When contacting a physician, take this SDS with you.

#### 4.1 After significant accidental inhalation

Move person to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists.

#### 4.2 After contact with eyes

Do not rub eye as additional cornea damage is possible by mechanical stress.

Remove any contact lenses and open the eyelid(s) widely to flush eye(s) immediately by thoroughly rinsing with plenty of clean water for at least 45 minutes to remove all particles. If possible, use isotonic water (0,9% NaCl).

Contact a specialist in occupational medicine or an eye specialist if irritation persists.

#### 4.3 After skin contact

For dry cement, remove and rinse abundantly with water.

For wet cement, wash skin with water.

Remove contaminated clothing, footwear, watches, etc. and clean thoroughly before re-using them.

Seek medical treatment in all cases of irritation or burns.

#### 4.4 After significant accidental ingestion

Do not induce vomiting. If person is conscious, wash out mouth with water and give plenty of water to drink. Get immediate medical attention.

### 5. Fire-Fighting Measures

#### 5.1 Flashpoint and method

Cements are non-combustible and non-explosive and will not facilitate or support combustion of other materials.

#### 5.2 Extinguishing media

Not applicable.

#### 5.3 Fire fighting equipment

Not applicable.

#### 5.4 Combustion products

None.

#### 5.5 Flammable limits: Lower explosion limit LEL – Upper explosion limit UEL

Not applicable.

## 6. Accidental Release Measures

### 6.1 Personal protective measures

Wear protective equipment as described under heading 8 and follow the advice for safe handling and use given under heading 7. Emergency procedures are not required.

### 6.2 Environment protection measures

Do not wash cement down sewage and drainage systems or into bodies of water.

### 6.3 Methods for cleaning up

Recover the spillage in a dry state if possible.

#### Dry cement

Use dry cleanup methods that do not cause airborne dispersion, e.g.: Vacuum cleaner (Industrial portable units, equipped with high efficiency particulate filters (HEPA filter) or equivalent technique).

Wipe-up the dust by mopping, wet brushing or water spraying and remove slurry (see wet cement).

When vacuum cleaning or wet cleaning are not possible and only dry cleaning with brushes can be done, ensure that the workers wear appropriate personal protective equipment and prevent dust from spreading.

Avoid inhalation of cement and contact with skin. Place spilled materials into a container. Solidify before disposal as described under heading 13.

#### Wet cement

Clean up wet cement and place in a container. Allow material to dry and solidify before disposal as described under heading 13.

## 7. Handling and Storage

### 7.1 Handling

Follow the recommendations given under heading 8.

Avoid dust development:

- For (bagged) cement used in open-ended mixers: first add the water and then carefully add the cement. Keep the height of the fall low. Start the mixing smoothly.
- To clean up dry cement see heading 6.3.

Carrying cement bags may cause sprains and strains to the back, arms, shoulders and legs. Handle with care and use appropriate control measures as per Council Directive 90/269/EEC on minimum health and safety requirements for the manual handling of loads where there is a risk, particularly of back injury.

### 7.2 Storage

Bulk cement should be stored in silos that are waterproof, dry (internal condensation minimised), clean and protected from contamination. To prevent burial or suffocation, do not enter a confined space, such as a silo, bin, bulk truck, or other storage container or vessel that stores or contains cement without taking the proper security measures. Cement can build-up or adhere to the walls of a confined space. The cement can release, collapse or fall unexpectedly.

Packed products should be stored in unopened bags clear of the ground in cool, dry conditions and protected from excessive draught in order to avoid degradation of quality.

Bags should be stacked in a stable manner.

### 7.3 Control of soluble Cr (VI)

For cements treated with a Cr (VI) reducing agent according to the regulations given in heading 15, the effectiveness of the reducing agent diminishes with time. Therefore, cement bags and/or delivery documents contain information on the period of time ('shelf life') for which the manufacturer has established that the reducing agent will continue to maintain the level of soluble Cr (VI) below the imposed limit of 0.0002%, when tested in accordance with EN 197-10. The information will also indicate the appropriate storage conditions for maintaining the effectiveness of the reducing agent.

## 8. Exposure Controls/Personal Protection

### 8.1 Exposure limit values

	OELV 8Hr TWA	OELV STEL 15 min TWA
Portland Cement Clinker	10mg/m <sup>3</sup>	4mg/m <sup>3</sup>
Cement *	10mg/m <sup>3</sup>	4mg/m <sup>3</sup>

\*For cements in Section 1.1

### 8.2 Exposure controls

#### 8.2.1 Occupational exposure controls

**General:** During work avoid kneeling in fresh mortar or concrete wherever possible. If kneeling is absolutely necessary then appropriate waterproof personal protective equipment must be worn.

Do not eat, drink or smoke when working with cement to avoid contact with skin or mouth.

Remove any contaminated clothing, footwear, watches, etc. and clean thoroughly before re-using them.

Immediately after working with cement or cement-containing materials, workers should wash thoroughly.

**Respiratory protection:** When a person is exposed to dust above exposure limits, use appropriate respiratory protection. It should be adapted to the dust level and conform to EN 149.

**Eye protection:** Wear approved glasses or safety goggles according to EN 166 when handling dry or wet cement to prevent contact with eyes.

**Skin protection:** Use impervious, abrasion and alkali resistant gloves (made of low soluble Cr (VI) containing material), boots, closed long-sleeved protective clothing to protect the skin from prolonged contact with wet cement.

Particular care should be taken to ensure that wet cement does not enter the boots.

In some circumstances such as when laying concrete or screeds, waterproof trousers or kneepads are necessary.

#### 8.2.2 Environmental exposure controls

Use closed systems or local exhaust ventilation to maintain exposure within OELV's where necessary.

## 9. Physical and Chemical Properties

### 9.1 General information

Dry cement is a finely ground inorganic material (odourless, grey powder).

### 9.2 Physical data

Mean particle size: 5-30 µm

Solubility in water (T = 20 °C): slight (0.1-1.5 g/l)

Density: 2.75-3.20 g/cm<sup>3</sup>

Bulk density : 0.9-1.5 g/cm<sup>3</sup>

pH (T = 20°C in water): 11-13.5

Boiling/melting point: Not relevant

Vapour pressure: Not relevant

Vapour density: Not relevant

Evaporation rate: Not relevant

Freezing point: Not relevant

Viscosity: Not relevant

Flash point: Not relevant

Flammability: Not relevant

Explosive properties: Not relevant

Oxidising properties: Not relevant

## 10. Stability and Reactivity

### 10.1 Stability

Dry cements are stable as long as they are stored properly (see heading 7) and compatible with most other building materials. When mixed with water, cements will harden into a stable mass that is not reactive to normal environments.

### 10.2 Conditions to avoid

Humidity during storage may cause lump formation and loss of product quality.

### 10.3 Materials to avoid

Uncontrolled use of aluminium powder in wet cement should be avoided as hydrogen is produced.

### 10.4 Hazardous decomposition products

Cement will not decompose into other hazardous by-products and does not polymerise.

## 11. Toxicological Information

### 11.1 Acute effects

**Eye contact:** Direct contact with cement may cause corneal damage by mechanical stress, immediate or delayed irritation or inflammation. Direct contact by larger amounts of dry cement or splashes of wet cement may cause effects ranging from moderate eye irritation to severe chemical burns.

**Skin contact:** Dry cement in contact with wet skin or exposure to moist or wet cement may cause thickening, cracking or fissuring of the skin. Prolonged contact in combination with abrasion can cause severe burns.

**Ingestion:** Swallowing large quantities may cause irritation to the gastrointestinal tract.

**Inhalation:** Cement may irritate the throat and respiratory tract. Coughing, sneezing, and shortness of breath may occur following exposures in excess of occupational exposure limits.

### 11.2 Chronic effects

**Inhalation:** Chronic exposure to respirable dust in excess of occupational exposure limits may cause coughing, shortness of breath and may cause chronic obstructive lung disease.

**Carcinogenicity:** A causal association between cement exposure and cancer has not been established [Reference (1)].

### Contact dermatitis/Sensitising effects:

Some individuals may exhibit eczema upon exposure to wet cement, caused either by the high pH which induces irritant contact dermatitis, or by an immunological reaction to soluble Cr (VI) which elicits allergic contact dermatitis [Reference (2)]. The response may appear in a variety of forms ranging from a mild rash to severe dermatitis. An exact diagnosis is often difficult to assess.

If the cement contains a soluble Cr (VI) reducing agent and as long as the mentioned period of effectiveness of the chromate reduction is not exceeded, a sensitising effect is not expected [Reference (3)].

### 11.3 Medical conditions aggravated by exposure

Inhaling cement dust may aggravate existing respiratory system disease(s) and/or medical conditions such as emphysema or asthma and/or existing skin and/or eye conditions.

## 12. Ecological Information

### 12.1 Ecotoxicity

The product is not expected to be hazardous to the environment. The addition of large amounts of cement to water may, however, cause a rise in pH and may therefore be toxic to aquatic life under certain circumstances.

### 12.2 Mobility

Dry cement is not volatile but might become airborne during handling operations.

### 12.3 Persistence and degradability/Bio accumulative potential/Results of PBT assessment/Other adverse effects

Not relevant as cement is an inorganic material. After hardening, cement presents no toxicity risks.

## 13. Disposal Considerations

### 13.1 Product - cement that has exceeded its shelf life (contains more than 0.0002% soluble Cr (VI)):

Shall not be used/sold other than for use in controlled closed and totally automated processes or should be recycled or disposed of according to local legislation or treated again with a reducing agent.

### 13.2 Product - unused residue or dry spillage

Pick up dry material. Possibly reuse depending upon shelf life considerations and the requirement to avoid dust exposure. In case of disposal, harden with water and dispose according to 13.4.

### 13.3 Product – slurries

Allow to harden, avoid entry in sewage and drainage systems or into bodies of water and dispose according to 13.4.

### 13.4 Product - after addition of water, hardened

Dispose of according to local legislation. Avoid entry into the sewage water system. Dispose of the hardened product as concrete waste. Due to inertisation, concrete waste is not a dangerous waste.

**EWC entries:** 10 13 14 (waste concrete or concrete sludge) or 17 01 01 (concrete).

### 13.5 Packaging

Completely empty the packaging and recycle / dispose in accordance with local legislation.

**EWC entry:** 15 01 01 (waste paper and cardboard packaging).

## 14. Transport Information

Cement is not covered by the international regulation on the transport of dangerous goods (IMDG, IATA, ADR/RID) and no classification is required.

No special precautions are needed apart from those mentioned under heading 8.

## 15. Regulatory Information

### 15.1 Classification and labelling of cement according to 1999/45/EC



Xi Irritant

R37/38 Irritating to respiratory system and skin

R41 Risk of serious damage to eyes

R43 May cause sensitisation by skin contact

S2 Keep out of reach of children

S22 Do not breathe dust

S24/25 Avoid contact with skin and eyes

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice

S36/37/39 Wear suitable protective clothing, gloves and eye/face protection

S46 If swallowed, seek medical advice immediately and show this container or label

### 15.2 The marketing and use of cement is subject to a restriction on the content of soluble Cr (VI)

EU Directive 2005/53/EC applies to cement (Refer section 7.3).

## 16. Other Information

### Abbreviations

- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transport Association
- ADR/RID: Agreement on the transport of dangerous goods by road/Regulations on the international transport of dangerous goods by rail
- OEL: occupational exposure limit
- TWA: Time Weighted Averages

### References

(1) Portland Cement Dust - Hazard assessment document EH75/7, UK Health and Safety Executive, 2006. Available from: <http://www.hse.gov.uk/pubns/web/portlandcement.pdf>

(2) Epidemiological assessment of the occurrence of allergic dermatitis in workers in the construction industry related to the content of Cr (VI) in cement, NIOH, Page 11, 2003.

(3) European Commission's Scientific Committee on Toxicology, Ecotoxicology and the Environment (SCTEE) opinion of the risks to health from Cr (VI) in cement (European Commission, 2002).

(4) EN 149 : 2001 'Respiratory Protective Devices'

(5) EN 166 : 2002 'Personal Eye Protection'

*The information on this data sheet reflects the currently available knowledge and is reliable provided that the product is used under the prescribed conditions and in accordance with the application specified on the packaging and/or in the technical guidance literature. Any other use of the product, including the use of the product in combination with any other product or any other process, is the responsibility of the user. It is implicit that the user is responsible for determining appropriate safety measures and for applying the legislation covering his own activities.*

