

Health and Safety Information Concrete



IRRITANT

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1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/ UNDERTAKING

1.1 Identification of the substance/preparation

An odourless buff to grey powder, containing cement, mainly insoluble in water mixed with coarse and fine aggregates. Supplied dry and premixed. When water is added it becomes a material for construction applications. This datasheet applies to the following products (hereafter described collectively as "product"):

- High Strength Concrete (40N)
- Multi-Purpose Concrete

1.2 Use of the substance/preparation

Product may be used as a premixed construction/repair material.

1.3 Company identification

Lafarge Cement United Kingdom
Portland House
Bickenhill Lane
Birmingham B37 7BQ

Technical helpline: 0845 812 6232

Email: info@lafargecement.co.uk

1.4 Emergency telephone

Emergency telephone number available during office hours: Tel 0845 812 6232

Emergency telephone number available outside office hours: No

2. HAZARD IDENTIFICATION

When the product reacts with water or when the product becomes damp, a strong alkaline solution is produced.



IRRITANT

2.1 Hazard characterisation

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 and potentially irreversible injuries.

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 fresh concrete may cause serious burns because they develop without pain being felt (for example when kneeling in fresh 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.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Chemical composition

The principal constituents of the cement are calcium silicates, calcium aluminates and sulfates. Small amounts of alkalis, lime and chlorides are also present together with trace amounts of chromium compounds.

Aggregates consist of naturally occurring sand and consist of combinations of various minerals including silica.

3.2 Components presenting a health hazard

| | |
|---------------------------------|-----------------------------|
| Substance | (a) Portland Cement Clinker |
| Concentration range (by weight) | Up to 25% |
| EINECS | 266-043-4 |
| CAS | 65997-15-1 |
| Symbol (C&L) | IRRITANT |
| R | R37 R38 R41 R43 |

4. FIRST AID MEASURES

When contacting a physician, take this safety datasheet 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 or later develops or if discomfort, coughing or other symptoms do not subside.

4.2 After contact with eyes

Do not rub eyes, 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 of occupational medicine or an eye specialist.

4.3 After skin contact

For dry product, remove and rinse abundantly with water. For wet product, 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 or contact anti poison centre.

5. FIRE-FIGHTING MEASURES

5.1 Flashpoint and method

Products are non-combustible and nonexplosive and will not facilitate nor support combustion of other materials.

5.2 Extinguishing media

All types of extinguishing media are suitable.

5.3 Fire fighting equipment

Products pose no fire-related hazards. No need for specialist protective equipment for fire fighters.

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 product down sewage and drainage systems or into bodies of water (e.g. streams).

6.3 Methods for cleaning up

Recover the spillage in a dry state if possible.

Dry product: Use dry cleanup methods that do not cause airborne dispersion - eg:

- 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 sprays or hoses (fine mist to avoid that the dust becomes airborne) and remove slurry. If not possible, remove by slurring with water (see wet product).

When wet cleaning or vacuum cleaning is 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 product and contact with skin. Place spilled materials into a container. Solidify before disposal as described under Heading 13.

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

7. HANDLING AND STORAGE

Do not handle or store near food and beverages or smoking materials.

7.1 Handling

Follow the recommendations as given under Heading 8.

Avoid dust development:

- For (bagged) product 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. Do not compress empty bags, except when contained in another clean bag.
- To clean up dry product, see heading 6.3. Carrying product bags may cause sprains and strains to the back, arms, shoulders and legs. Handle with care and use appropriate control measures.

7.2 Storage

Packed products should be stored in unopened bags.

Bags should be stacked in a stable manner.

7.3 Control of soluble Cr (VI)

For product 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 product bags and/or delivery documents will 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%, according to EN 197-10. They 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 (Workplace Exposure Limits (WEL))

WEL 8hr Time Weighted Average (TWA):

- Total inhalable dust 10mg/m³
- Respirable dust 4mg/m³

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. Immediately after working with product, workers should wash or shower or use skin moisturizers. Remove contaminated clothing, footwear, watches, etc. and clean thoroughly before re-using them.

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 the relevant EN standard. Suitable respiratory protection should be worn to ensure that personal exposure is less than the WEL.

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

Skin protection: Use impervious, abrasion and alkali resistant gloves (made of low soluble Cr (VI) containing material), internally lined with cotton, boots, closed long-sleeved protective clothing and additionally skin care products (including barrier creams) to protect the skin from prolonged contact with wet product. Particular care should be taken to ensure that wet product does not enter the boots.

8.2.2 Environmental exposure controls

According to available technology.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 General information

Dry product is a finely ground inorganic material (odourless, grey or white powder)

9.2 Physical data

Mean particle size: 5µm-2mm

Solubility in water (T = 20 °C): N/A

Density: 2.75-3.20 g/cm³

Apparent density (ES): 1.4-1.6 g/cm³

pH (T = 20°C in water): 11-13.5

Boiling/melting point: > 1 250 °C

Vapour pressure, vapour density, evaporation rate, freezing point, viscosity: Not relevant.

10. STABILITY AND REACTIVITY

10.1 Stability

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

10.2 Conditions to avoid

None.

10.4 Hazardous decomposition products

Product will not decompose into other hazardous by-products and do not polymerise.

11. TOXICOLOGICAL INFORMATION

11.1 Acute effects

Eye contact: Direct contact with product may cause corneal damage by mechanical stress, immediate or delayed irritation or inflammation. Direct contact by larger amounts of dry product or splashes of wet product may cause effects ranging from moderate eye irritation (e.g. conjunctivitis or blepharitis) to chemical burns and blindness.

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

Acute dermal toxicity: Limit test, rabbit, 24 hours contact, 2 000 mg/kg body weight – no lethality [Reference (2)].

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

Inhalation: Product 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 (COPD).

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 product, 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 (4)].

The response may appear in a variety of forms ranging from a mild rash to severe dermatitis and is a combination of those two mechanisms. An exact diagnosis is often difficult to assess. If the product 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 product 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 (LC50 aquatic toxicity not determined). The addition of large amounts of product to water may, however, cause a rise in pH and may therefore be toxic to aquatic life under certain circumstances.

12.2 Mobility

Dry product 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 product is an inorganic material. After hardening, product presents no toxicity risks.

13. DISPOSAL CONSIDERATIONS

13.1 Product - product that has exceeded its shelf life

When demonstrated that it 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. Mark the containers. 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 (e.g. streams) and dispose of as indicated in 13.4.

13.4 Product - after addition of water, hardened

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

EWC entries: 10 13 14 (waste from manufacturing of cement – waste concrete or concrete sludge) or 17 01 01 (construction and demolition wastes - concrete).

13.5 Packaging

Completely empty the packaging and process it according to local legislation.

EWC entry: 15 01 02 (plastic packaging).

14. TRANSPORT INFORMATION

Cement is not covered by the international regulation on the transport of dangerous goods (IMDG, IATA, ADR/RID) and therefore 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 product according to 1999/45/EC



IRRITANT

Risk phrases

R37/38 Irritating to respiratory system and skin

R41 Risk of serious damage to eyes

R43 May cause sensitisation by skin contact

Safety phrases

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 product is subject to a restriction on the content of soluble Cr (VI)

From 17 January 2005, those cements which naturally contain more than 2 ppm of soluble hexavalent chromium (chromium (VI)) by dry weight of cement, will be treated with a chemical reducing agent (such as ferrous sulfate) that maintains the level of hexavalent chromium in the cement to below 2 ppm by dry weight of cement. The effectiveness of the reducing agent reduces with time, therefore cement bags and/or delivery documents will contain information on the period of time ('shelf life') for which the manufacturer has established that the reducing agent will continue to limit the level of hexavalent chromium to less than 2 ppm by dry weight of cement. They will also indicate the appropriate storage conditions for maintaining the effectiveness of the reducing agent.

15.3 National legislation/requirements

CONIAC Health Hazard Information Sheet No. 26 (CEMENT)

Health and Safety at Work etc Act 1974

Control of Substances Hazardous to Health (Regulations)

PORTLAND CEMENT DUST – criteria document for an occupational exposure limit. June 1994 (ISBN 07176 – 0763 – 1)

HSE Guidance Notes EH26 (Occupational Skin Diseases – Health and Safety Precautions)

HSE Guidance Note EH40 (Workplace Exposure Limits)

Any authorised manual on First Aid by St. John's/St. Andrew's/Red Cross

Manual Handling Operations Regulations

Environmental Protection Act

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
- LC50 Lethal Concentration where 50% of the test animals dies.
- 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) Observations on the effects of skin irritation caused by cement, Kietzman et al, *Dermatosen*, 47, 5, 184-189 (1999).

(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) 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.

The information on this datasheet 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.

The information in this datasheet is accurate at the time of printing, but Lafarge Cement UK reserve the right to amend details as part of their product development programme.

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