January 2009

Safety Data Sheet for Cements

In accordance with Regulation EC n° 1907/2006
Date issued January 01, 2009

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

1.1 Identification of the substance/preparation

Cement in accordance with EN 197-1

CEM I	Portland Cements	
CEM II	Compound Portland Cements	All classes
CEM III	Blastfurnace Cements	and
CEM V	Compound Cements	all compositions

1.2 Use of the substance/preparation

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

1.3 Company identification

Company name: S.A. Cimenteries CBR Cementbedrijven N.V.
Address: Chaussée de La Hulpe 185 Terhulpsesteenweg, 1170 Brussels, Belgium
Telephone number: + 32 (0)2 678 32 11
E-mail of responsible person for SDS: REACH-info@cbr.be

1.4 Emergency telephone

Emergency telephone number: Belgian Anti-poison center
+ 32 (0)2 70 245 245 Available outside office hours.

2. Hazard identification

When cement reacts with water for instance when making concrete or mortar, or when the cement becomes damp, 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.

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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.

2.5 Further information

Cement is poor in chromate by itself or by reducing the content of sensitising soluble chromium (VI) to below 0.0002% in the cement ready for use according to legislation specified under heading 15.

3. Composition/information on ingredients

3.1 Chemical composition

Common cement types according to EN 197-1:

	CAS -No	EC-No	Hazard symbol	R-sentences
Portland cement clinker	65997-15-1	266-043-4	Xi	37,38,41,43
Fly ash	68131-74-8	268-627-4	-	-
Slag	65996-69-2	266-002-0	-	-
Limestone	1317-65-3	215-279-6	-	-
Calcium Sulfate	07778-18-9	231-900-3	-	-

3.2 Components presenting a health hazard

	CAS -No	EC-No	Hazard symbol	R-sentences
Portland cement clinker	65997-15-1	266-043-4	Xi	37,38,41,43

The table below features the clinker content of the cements. The specified % refers to the sum of the principal and secondary constituents of the cement. Calcium sulfate (gypsum and/or anhydrite) which represents an addition of about 5% is not included.

Cement type	Portland cement clinker content
CEM I	95 – 100 %
CEM II	65 – 94 %
CEM III	5 – 64 %
CEM V	20 – 64 %

For more details, consult the cements technical data sheet.

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 or later develops or if discomfort, coughing or other symptoms subside.

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 of occupational medicine or an eye specialist.

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 or contact anti poison centre.

5. Fire-fighting measures

5.1 Flashpoint and method

Cements are non-combustible and non-explosive 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

Cement poses 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 cement 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 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 sprays or hoses (fine mist to avoid that the dust becomes airborne) and remove slurry.
If not possible, remove by slurrying with water (see wet cement). 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 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 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) 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. Do not compress empty bags, except when contained in another clean bag.
- To clean up dry cement see heading 6.3.

Carrying bags may cause sprains and strains to the back, arms, shoulders and legs. Handle with care and use appropriate control measures.

7.2 Storage

Bulk cement should be stored in silos that are water-proof, dry (internal condensation minimised), clean and protected from contamination. Engulfment hazard: 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 chromium (VI)

For cements treated with a chromium (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 chromium (VI) below the imposed limit of 0.0002%, according to EN 197-10. They also indicate the appropriate storage conditions for maintaining the effectiveness of the reducing agent.

8. Exposure controls/personal protection

8.1 Exposure limit values

TWA : 10mg/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 cement or cement-containing materials, workers should wash or shower or use skin moisturisers.
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 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 chromium (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 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 screed, waterproof trousers or kneepads are necessary.

8.2.2. Environmental exposure controls

According to available technology.

9. Physical and chemical properties

9.1 General information

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

9.2 Physical data

Main particle size:	5 - 30 µm
Solubility in water (T = 20 °C):	slight (0.1 - 1.5 g/l)
Density	2.75 - 3.20 g/cm³
Apparent density (ES):	0.9 - 1.5 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 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 produced.

10.4 Hazardous decomposition products

Cements will not decompose into other hazardous by-products and do 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

(e.g. conjunctivitis or blepharitis) to chemical burns and blindness.

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.

Acute dermal toxicity: Limit test, rabbit, 24 hours contact, 2000 mg/kg body weight – no lethality [Reference (2)].

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 (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 cement, caused either by the high pH which induces irritant contact dermatitis, or by an immunological reaction to soluble chromium (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 cement contains a soluble chromium (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 (LC50 aquatic toxicity not determined). 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 (and when demonstrated that it contains more than 0.0002% soluble chromium (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 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), 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 chromium (VI)

Cement in accordance with the European directive 2003/53/CE regarding chromium (VI) rendered in Belgian RR 15th of July 2004. When the period of effectiveness of the chromate reduction is exceeded, the cement can contain more than 0.0002% soluble chromium (VI).

16. Other information

Abbreviations

- SDS: Safety Data Sheet
- 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

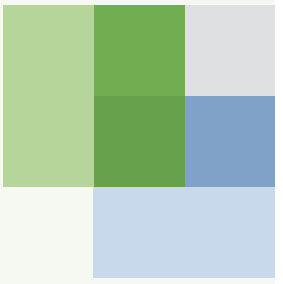
(1) Portland Cement Dust - Hazard assessment document EH75/7, UK Health and Safety Executive, 2006. Available from: HYPERLINK http://www.hse.gov.uk/pubns/web/portlandcement.pdf

(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.

(5) Belgian Royal Resolution 11/03/2002



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.

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