

SAFETY DATA SHEET

In accordance with 1907/2006 annex II and 1272/2008
(All references to EU regulations and directives are abbreviated into only the numeric term)
Amendment date 2023-05-12
Replaces SDS issued 2022-04-05
Revision date 2022-04-05
Version number 7.1



SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name Multicem

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses Filling materials for the construction industry
Common cements and cement containing mixtures (hydraulic binders) are used industrially, by professionals as well as by consumers in building and construction work, indoor and outdoor

1.3. Details of the supplier of the safety data sheet

Company Heidelberg Materials Cement Sweden AB
Marieviksgatan 25, Box 47055
SE-100 74 Stockholm
Sweden
Telephone 08 625 68 00
E-mail asa.nilsson@heidelbergmaterials.com

1.4. Emergency telephone number

Phone number for emergencies: 999 or 112. The numbers are available 24/7.

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Skin Irrit. 2, H315
Eye Dam. 1, H318
STOT SE 3, H335
(See section 16)

2.2. Label elements

Hazard pictogram



Signal word	Danger
Hazard statements	
H315	Causes skin irritation
H318	Causes serious eye damage
H335	May cause respiratory irritation
Precautionary statements	
P102	Keep out of reach of children
P261	Avoid breathing dust
P280	Wear protective gloves, protective clothing and eye or face protection
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310	Immediately call a doctor
P501	Dispose of contents and container to authorised waste disposal facility

Supplemental hazard information

Contains: CEMENT KILN DUST, PORTLAND CEMENT, PORTLAND CEMENT

2.3. Other hazards

Cement does not meet the criteria for PBT or vPvB in accordance with Annex XIII of REACH (Regulation (EC) No 1907/2006). When flue dust accidentally comes into contact with water or when flue dust becomes damp, a strong alkaline solution is produced. Due to the high alkalinity, wet flue dust may provoke skin and eye irritation.

The preparation has been chromium reduced thereby removing the classification as an allergen.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Note that the table shows known hazards of the ingredients in pure form. These hazards are reduced or eliminated when mixed or diluted, see Section 16d.

Constituent	Classification	Concentration
CEMENT KILN DUST, PORTLAND CEMENT		
CAS No: 68475-76-3 EC No: 270-659-9 REACH: 01-2119486767-17-0067	Skin Irrit. 2, Eye Dam. 1, STOT SE 3; H315, H318, H335	45 - 55 %
PORTLAND CEMENT		
CAS No: 65997-15-1 EC No: 266-043-4	Skin Irrit. 2, Eye Dam. 1, Skin. Sens. 1, STOT SE 3; H315, H318, H317, H335	45 - 55 %

Explanations to the classification and labelling of the ingredients are given in Section 16e. Official abbreviations are printed in normal font. Text in italics are specifications and/or complements used in the calculation of the classification of this mixture, see Section 16b.

SECTION 4: First aid measures

4.1. Description of first aid measures

Generally

In case of concern, or if symptoms persist, call a doctor/physician.

First aid workers should avoid contact with wet cement or wet cement containing mixtures.

Upon breathing in

Bring the injured person out into fresh air. Give artificial respiration if breathing has stopped. If breathing is difficult let trained personnel administer oxygen. Let the injured person rest in a warm place with fresh air and seek medical advice immediately.

Upon eye contact

If dust has come in contact with eyes, do not rub.

Remove contact lenses immediately if possible.

Immediately rinse with lukewarm water for 15 - 20 minutes with eyes kept wide open; If symptoms persist, call a doctor/physician.

Important! Also flush during transport to hospital (eye specialist).

Upon skin contact

Remove contaminated clothes.

Remove all solid particles and flush with lots of water.

If symptoms occur, contact a physician.

Wash contaminated clothing before reuse.

Upon ingestion

Rinse mouth out thoroughly first with water, then SPIT OUT the rinse water. Drink at least half a litre of water and seek medical advice. DO NOT INDUCE VOMITING.

4.2. Most important symptoms and effects, both acute and delayed

Generally

Cement may have an irritating effect on moist skin (due to sweat or humidity) after prolonged contact or may cause contact dermatitis after repeated 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).

Eye contact with cement (dry or wet) may cause serious and potentially irreversible injuries. Repeated inhalation of dust of Common cements over a long period of time increases the risk of developing lung diseases.

Upon breathing in

Inhalation of dust may cause coughing and irritation.

Repeated inhalation of flue dust over a long period of time increases the risk of developing lung diseases.

Upon eye contact

Eye contact with cement (dry or wet) may cause serious eye damage that may be permanent.

Upon skin contact

Cement may irritate skin that is moist (due to sweat or humidity) after prolonged contact and can cause contact dermatitis after repeated contact. Prolonged contact with wet cement or wet concrete can cause serious burns as they develop without pain (for example, when kneeling in wet concrete, even if one is wearing pants).

4.3. Indication of any immediate medical attention and special treatment needed

Upon contact with a doctor, make sure to have the label or this safety data sheet with you.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Not combustible; Extinguished with materials intended for the surrounding fire.

5.2. Special hazards arising from the substance or mixture

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

5.3. Advice for firefighters

Protective measures to be taken with regard to other materials at the scene of the fire .

In case of fire use proper breathing apparatus.

Wear full protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Do not inhale dust and avoid contact with skin, eyes and clothes when cleaning up spill.
Use recommended safety equipment, see section 8.
Keep unauthorized and unprotected people at a safe distance.
Ensure good ventilation.

6.2. Environmental precautions

Avoid emissions into soil, water or air.
Avoid discharge into sewers.

6.3. Methods and material for containment and cleaning up

Avoid dust formation and do not dry brush.

Dry concrete: Use sanitation methods such as vacuum sanitation and vacuum extraction (industrial portable units, equipped with highly efficient air filters (EPA and HEPA, EN 1822-1:2009) or equivalent technique) which do not lead to airborne dispersion. Never use compressed air. Alternatively clean up the dust by washing the area, wet vacuuming or by using water spray or hosing (a fine mist to avoid that the dust becomes airborne) and discard slurry. If this is not possible, discard by suspending in water (see wet concrete). When wet cleaning or vacuuming is not possible, and only dry cleaning with brush is possible, please ensure that the workers are using adequate personal protective clothing and avoid dispersing the dust. Avoid inhalation of and skin contact with the concrete. Put waste in a container. Solidify before disposal according to the description in section 13.

Wet concrete: Remove wet concrete and put it in a container. Let the substance dry and harden before disposal according to the description in section 13.

Collect the spillage in a dry state if possible.

6.4. Reference to other sections

See section 8 and 13 for personal protection equipment and disposal considerations.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid handling in a manner which will raise dust.

Do not eat, drink or smoke in premises where this product is handled.

Do not inhale dust and avoid contact with skin and eyes.

Take the necessary preventive and protective measures for safe handling.

Store this product separately from food items and keep it out of the reach of children and pets.

Wash your hands after using the product.

Remove contaminated clothing.

Wash contaminated clothing before reuse.

Use recommended safety equipment, see section 8.

Implement appropriate engineering controls if necessary, see Section 8.

7.2. Conditions for safe storage, including any incompatibilities

Bulk cement should be stored in silos that are waterproof, dry (i.e. with internal condensation minimised), clean and protected from contamination.

Engulfment hazard: To prevent engulfment 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.

Do not use aluminium containers for the storage or transport of wet cement containing mixtures due to incompatibility of the materials.

The product should be stored in a manner which prevents hazards to health and the environment. Avoid exposure to humans and animals and do not discharge the product in a sensitive environment.

To be stored away from food and animal fodder and away from devices or surfaces that are in contact with those items.

Keep out of reach for children.

7.3. Specific end use(s)

No additional information for the specific end uses (see section 1.2).

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1. National limit values

Pulverised fuel ash

United Kingdom (EH40/2005)

Time-weighted-average exposure limit (TWA) 10 mg/m³ (Inhalable dust) / 4 mg/m³ (Respirable dust)

PORTLAND CEMENT

United Kingdom (EH40/2005)

Time-weighted-average exposure limit (TWA) 10 mg/m³ (Inhalable dust)

Time-weighted-average exposure limit (TWA) 4 mg/m³ (Respirable dust)

DNEL

No data available.

PNEC

No data available.

8.2. Exposure controls

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. Before starting to work with cement, apply a barrier creme and reapply it at regular intervals. 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.

The risks posed by the product or its constituents must be considered in the task specific risk assessment, in accordance with current working environment legislation. The risk assessment should be reviewed regularly and updated if necessary.

8.2.1. Appropriate engineering controls

The ventilation in the workplace must ensure an air quality that meets the requirements of the current working environment legislation. Local exhaust ventilation should be used to remove airborne contaminants at the source.

Eye-rinsing facilities shall be available at the workplace.

Eye/face 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 suitable protective clothing.

Use watertight, wear- and alkali-resistant protective gloves (eg nitrile soaked cotton gloves with CE marking) internally lined with cotton; boots; closed long-sleeved protective clothing as well as skin care products (eg 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. For the gloves, respect the maximum wearing time to avoid skin problems. In some circumstances, such as when laying concrete or screed, waterproof trousers or kneepads are necessary.

Wear protective gloves (EN 374) upon repeated or prolonged exposure.

The most suitable protective glove should be chosen in consultation with the glove supplier, taking into account the risk assessment for the specific task and the properties of the chemicals involved. Note that the breakthrough time of the material is affected by the duration of the exposure, temperature conditions, abrasion, etcetera.

During continuous contact use gloves with a minimum breakthrough time of at least 240 minutes, preferably over 480 minutes.

Based on the chemical properties of the product, the following glove materials are recommended (EN 374):.

- Neoprene rubber.
- Nitrile rubber.
- Viton.

Respiratory protection

Use appropriate respiratory protective equipment in case of insufficient ventilation.

The most appropriate respiratory protective equipment should be decided in consultation with the appointed safety representative, taking into account the risk assessment for the specific task.

Based on the physical and chemical properties of the product, the following filter type(s) and/or filter combination(s) are recommended:.

- B/P2.
- B/P3.

8.2.3. Environmental exposure controls

For limitation of environmental exposure, see Section 12.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

(a) Physical state	solid Form: Powder
(b) Colour	grey
(c) Odour	no smell or uncharacteristic smell
(d) Melting point/freezing point	>850 °C
(e) Boiling point or initial boiling point and boiling range	Not indicated
(f) Flammability	Not indicated
(g) Lower and upper explosion limit	Not indicated
(h) Flash point	Not indicated
(i) Auto-ignition temperature	Not indicated
(j) Decomposition temperature	Not indicated
(k) pH	In working solution the pH value is: 9 - 13
(l) Kinematic viscosity	Not indicated
(m) Solubility	Solubility in water: 0,1-100 g/L
(n) Partition coefficient n-octanol/water (log value)	Not indicated
(o) Vapour pressure	Not indicated
(p) Density and/or relative density	2.7 - 3.2
(q) Relative vapour density	Not indicated
(r) Particle characteristics	Not indicated

9.2. Other information

9.2.1. Information with regard to physical hazard classes

Not indicated

9.2.2. Other safety characteristics

Not indicated

SECTION 10: Stability and reactivity

10.1. Reactivity

When the concrete is mixed with water, it hardens to a stable substance, which is not reactive in normal environments. Cement reacts with water and forms calcium hydroxide which results in a high pH (12.5-13.5) and subsequent hardening.

10.2. Chemical stability

Dry concrete is stable if stored correctly (see section 7) and it is compatible with most other building materials. It must be stored dry. Contact with incompatible materials should be avoided. Wet concrete is alkaline and incompatible with acids, ammonium salts, aluminium and other non-noble metals. Concrete dissolves in hydrofluoric acid and creates volatile silicon tetrafluoride gas. The concrete reacts with water and creates silicates and calcium hydroxide. Silicates in concrete react with strong oxidizers such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride and oxygen difluoride.

10.3. Possibility of hazardous reactions

When cement reacts with water, e.g. when producing concrete or mortar, or when the cement gets moist, it forms a strong alkaline solution.

10.4. Conditions to avoid

Damp storage conditions may lead to formation of lumps and diminish the product quality.

10.5. Incompatible materials

Acids, ammonium salts, aluminium or other non-noble metals. Uncontrolled use of aluminium powder in wet concrete should be avoided, as hydrogen gas is formed.

10.6. Hazardous decomposition products

Does not decompose to hazardous substances.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Not indicated.

Acute toxicity

The product is not classified as acutely toxic.

PORTLAND CEMENT

LD50 rat 24h: > 2000 mg/kg Dermal

LC50 rat 4h: > 5 mg/L Inhalation

LD50 rat 24h: > 2000 mg/kg Orally

Skin corrosion/irritation

Cement in contact with wet skin may cause thickening, cracking or fissuring of the skin. Prolonged contact in combination with abrasion may cause severe burns.

Serious eye damage/irritation

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.

Respiratory or skin sensitisation

Some individuals may develop eczema upon exposure to wet cement dust, caused either by the high pH which induces irritant contact dermatitis after prolonged contact, or by an immunological reaction to soluble Cr (VI) which elicits allergic contact dermatitis. The response may appear in a variety of forms ranging from a mild rash to severe dermatitis and is a combination of the two above mentioned mechanisms. 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. There is no indication of sensitisation of the respiratory system.

Germ cell mutagenicity

The product is not classified as mutagen.

Carcinogenicity

The product is not classified as carcinogenic.

Reproductive toxicity

The product is not classified as a reproductive toxicant.

STOT-single exposure

Cement dust may irritate the throat and respiratory tract. Coughing, sneezing, and shortness of breath may occur following exposures in excess of occupational exposure limits. Overall, the pattern of evidence clearly indicates that occupational exposure to cement dust has produced deficits in respiratory function. However, evidence available at the present time is insufficient to establish with any confidence the dose-response relationship for these effects.

STOT-repeated exposure

There is an indication of COPD. The effects are acute and due to high exposures. No chronic effects or effects at low concentration have been observed.

The criteria for classification cannot be considered fulfilled based on available data.

Aspiration hazard

The product is not classified as being toxic for aspiration.

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

The product does not have any known endocrine-disrupting properties.

11.2.2. Other information

Not indicated.

SECTION 12: Ecological information

12.1. Toxicity

The product is not hazardous to the environment. Ecotoxicology tests with Portland cement and *Daphnia magna* and *Selenastrum coli* have proven insignificant toxicological effect. Therefore it has not been possible to establish values for LC50 and EC50. There are no indications for toxicity in the sediment phase. However, addition of large quantities of concrete to water can increase the pH and therefore the concrete could be toxic for aquatic organisms under certain conditions.

Prevent release on land, in water and drains.

12.2. Persistence and degradability

The methods used to test biodegradability is not applicable on inorganic compounds.

12.3. Bioaccumulative potential

Not applicable.

12.4. Mobility in soil

Not relevant as concrete is an inorganic material. No toxicity risk is present after the concrete has cured.

12.5. Results of PBT and vPvB assessment

The criteria for PBT and vPvB do not apply to inorganic substances.

12.6. Endocrine disrupting properties

The product does not have any known endocrine-disrupting properties.

12.7. Other adverse effects

Data lacking.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste handling of the product

Product - cement that has exceeded its shelf life

(and 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.

Product - unused residue or dry spillage

Pick up dry unused residue or dry spillage as is. 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 "Product – after addition of water, hardened".

Product – slurries

Allow to harden, avoid entry in sewage and drainage systems or into bodies of water (e.g. streams) and dispose of as explained below under "Product - after addition of water, hardened".

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.

Classification according to 2006/12

Recommended LoW-code: 10 13 14 Waste concrete and concrete sludge.

Recommended LoW-code: 17 01 01 Concrete.

Packaging

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

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

SECTION 14: Transport information

Where not otherwise stated the information applies to all of the UN Model Regulations, i.e. ADR (road), RID (railway), ADN (inland waterways), IMDG (sea), and ICAO (IATA) (air).

14.1. UN number or ID number

Not classified as dangerous goods

14.2. UN proper shipping name

Not applicable

14.3. Transport hazard class(es)

Not applicable

14.4. Packing group

Not applicable

14.5. Environmental hazards

Not applicable

14.6. Special precautions for user

Not applicable

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

14.8 Other transport information

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Cement is a mixture according to REACH and is not subject to registration. Cement clinker is exempt from registration (Art 2.7 (b) and Annex V.10 of REACH).

The marketing and use of cement is subject to a restriction on the content of soluble Cr (VI) (REACH Annex XVII point 47 Chromium VI compounds):

1. Cement and cement-containing mixtures shall not be placed on the market, or used, if they contain, when hydrated, more than 2 mg/kg (0,0002 %) soluble chromium VI of the total dry weight of the cement.
2. If reducing agents are used, then without prejudice to the application of other Community provisions on the classification, packaging and labelling of substances and mixtures, suppliers shall ensure before the placing on the market that the packaging of cement or cement-containing mixtures is visibly, legibly and indelibly marked with information on the packing date, as well as on the storage conditions and the storage period appropriate to maintaining the activity of the reducing agent and to keeping the content of soluble chromium VI below the limit indicated in paragraph 1.
3. By way of derogation, paragraphs 1 and 2 shall not apply to the placing on the market for, and use in, controlled closed and totally automated processes in which cement and cement-containing mixtures are handled solely by machines and in which there is no possibility of contact with the skin.

The so-called "Good practice guides" which contain advice on safe handling practices can be found from: <http://www.nepsi.eu/good-practice-guide.aspx>. These good practices have been adopted under the Social Dialogue "Agreement on Workers' Health Protection through the Good Handling and Use of Crystalline Silica and Products Containing it by Employee and Employer European sectoral associations, among which CEMBUREAU.

15.2. Chemical safety assessment

Assessment and chemical safety report in accordance with 1907/2006 Annex I has not yet been performed.

SECTION 16: Other information

16a. Indication of where changes have been made to the previous version of the safety data sheet

Revisions of this document

Earlier versions

2022-04-05 Changes in section(s) 1.

16b. Legend to abbreviations and acronyms used in the safety data sheet

Full texts for Hazard Class and Category Code mentioned in section 3

- Skin Irrit. 2 Skin corrosion/irritation, Hazard Category 2 - Skin Irrit. 2, H315 - Causes skin irritation
Eye Dam. 1 Serious eye damage/eye irritation, Hazard Category 1 - Eye Dam. 1, H318 - Causes serious eye damage
STOT SE 3 Specific target organ toxicity — Single exposure, Hazard Category 3, Respiratory tract irritation - STOT SE 3, H335 - May cause respiratory irritation
Skin. Sens. 1 Respiratory or skin sensitisation, Sensitisation — Skin, hazard category 1 - Skin. Sens. 1, H317 - May cause an allergic skin reaction

Explanations of the abbreviations in Section 14

- ADR European Agreement concerning the International Transport of Dangerous Goods by Road
RID Regulations concerning the International Transport of Dangerous Goods by Rail
IMDG International Maritime Dangerous Goods Code
ICAO International Civil Aviation Organization (ICAO, 999 University Street, Montreal, Quebec H3C 5H7, Canada)
IATA The International Air Transport Association

16c. Key literature references and sources for data

Sources for data

Primary data for the calculation of the hazards has preferentially been taken from the official European classification list, 1272/2008 Annex I, as updated to 2023-05-12.

Where such data was not available, alternative documentation used to establish the official classification was used, e.g. IUCLID (International Uniform Chemical Information Database). As a second alternative, information was used from reputable international chemical industries, and as a third alternative other available information was used, e.g. material safety data sheets from other suppliers or information from non-profit associations, where reliability of the source was assessed by expert opinion. If, in spite of this, reliable information could not be sourced, the hazards were assessed by expert opinions based on the known hazards of similar substances, and according to the principles in 1907/2006 and 1272/2008.

Full texts for Regulations mentioned in this Safety Data Sheet

- 1907/2006 REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC
- 1272/2008 REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006
- EH40/2005 EH40/2005 Workplace exposure limits

16d. Methods of evaluating information referred to in 1272/2008 Article 9 which was used for the purpose of classification

Hazard calculation for this mixture has been performed as a cumulative assessment with the aid of expert assessments in accordance with 1272/2008 Annex I, where all available information which may be significant to establishing the hazards of the mixture was assessed together, and in accordance with 1907/2006 Annex XI.

16e. List of relevant hazard statements and/or precautionary statements

Full texts for hazard statements mentioned in section 3

- H315 Causes skin irritation
- H318 Causes serious eye damage
- H335 May cause respiratory irritation
- H317 May cause an allergic skin reaction

16f. Advice on any training appropriate for workers to ensure protection of human health and the environment

Warning for misuse

Not indicated.

Other relevant information

Other literature references and sources for data not mentioned above:

(1) Portland Cement Dust - Hazard assessment document EH75/7, UK Health and Safety Executive, 2006. Finns på: <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).

http://ec.europa.eu/health/archive/ph_risk/committees/sct/documents/out158_en.pdf.

(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) U.S. EPA, Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 3rd ed. EPA/600/7-91/002, Environmental Monitoring and Support Laboratory, U.S. EPA, Cincinnati, OH (1994a) and 4th ed. EPA-821-R-02-013, US EPA, office of water, Washington D.C. (2002).

(6) U.S. EPA, Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, 4th ed. EPA/600/4-90/027F, Environmental Monitoring and Support Laboratory, U.S. EPA, Cincinnati, OH (1993) and 5th ed. EPA-821-R-02-012, US EPA, office of water, Washington D.C. (2002).

(7) Environmental Impact of Construction and Repair Materials on Surface and Ground Waters. Summary of Methodology, Laboratory Results, and Model Development. NCHRP report 448, National Academy Press, Washington, D.C., 2001.

- (8) Final report Sediment Phase Toxicity Test Results with *Corophium volutator* for Portland clinker prepared for Norcem A.S. by AnalyCen Ecotox AS, 2007.
- (9) TNO report V8801/02, An acute (4-hour) inhalation toxicity study with Portland Cement Clinker CLP/GHS 03-2010-fine in rats, August 2010.
- (10) TNO report V8815/09, Evaluation of eye irritation potential of cement clinker G in vitro using the isolated chicken eye test, April 2010.
- (11) TNO report V8815/10, Evaluation of eye irritation potential of cement clinker W in vitro using the isolated chicken eye test, April 2010.
- (12) Investigation of the cytotoxic and proinflammatory effects of cement dusts in rat alveolar macrophages, Van Berlo et al, Chem. Res. Toxicol., 2009 Sept; 22(9):1548-58.
- (13) Cytotoxicity and genotoxicity of cement dusts in A549 human epithelial lung cells in vitro; Gminski et al, Abstract DGPT conference Mainz, 2008.
- (14) Comments on a recommendation from the American Conference of governmental industrial Hygienists to change the threshold limit value for Portland cement, Patrick A. Hessel and John F. Gamble, EpiLung Consulting, June 2008.
- (15) Prospective monitoring of exposure and lung function among cement workers, Interim report of the study after the data collection of Phase I-II 2006-2010, Hilde Notø, Helge Kjuus, Marit Skogstad and Karl-Christian Nordby, National Institute of Occupational Health, Oslo, Norway, March 2010.
- (16) MEASE, Metals estimation and assessment of substance exposure, EBRC Consulting GmbH for Eurometaux, <http://www.ebrc.de/ebrc/ebrc-mease.php>

Editorial information



This material safety data sheet has been prepared and checked by KemRisk®, KemRisk Sweden AB, Platensgatan 8, SE-582 20 Linköping, Sweden, www.kemrisk.se