



Common Cement

Material Safety Data Sheet

Invicta's Portland cement is a common cement produced for the ready-mixed concrete, concrete product and general construction purposes. Portland cement is used in concrete, mortar and grout.

Health and Safety Information In accordance with Regulation (EC) No 1907/2006 (REACH) as amended by Regulation (EU) No 453/2010

European Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures came into force on 20 January 2009 in all European Union (EU) Member States, including the UK. It is known by its abbreviated form, 'the CLP Regulation' or just plain 'CLP'. The EU CLP Regulation adopts the United Nations' Globally Harmonized System of the classification and labelling of chemicals (GHS) across all EU countries. This included the UK when a EU Member State. As GHS is a voluntary agreement rather than a law, it must be adopted through a suitable national or regional legal mechanism to ensure it becomes legally binding. That's what the EU CLP Regulation does, and the EU CLP Regulation as amended is retained in GB law and is identified as GB CLP.

1. Identification of the substance and of the company			
1.1 Product identifier			
General Trade name	Common cement in accordance with BS EN 197-1. Invicta Portland cement, CEM I		
	Substance	EC Number	CAS Number
	Portland cement clinker*	266-043-4	65997-15-1
	* ECHA entry: Cement, Portland, chemicals		
1.2 Relevant Identified uses of the substance and uses advised against			
General uses	Common cements are used in concrete, mortar and grout as part of the cement to improve fresh and hardened properties. Common cements are used to manufacture hydraulic binders for building and construction work, such as ready-mixed concrete, mortars, renders and grouts, as well as precast concrete. Common cements and cement containing mixtures are used industrially, by professionals as well as by consumers in building and construction work, indoor and outdoor. The identified uses of cements and cement containing mixtures cover the dry products and the products in their workable		

	fresh wet condition.	
1.3 Details of the supplier of the safety information sheet		
Supplier Address Telephone Email	Invicta Invicta Terminal, Great Basin Road, Port of Sheerness, ME12 1RS 01795 418630 anna.ozyurek@invictasolutions.co.uk info@invictasolutions.co.uk	
1.3 Emergency telephone number		
Emergency telephone	Available office hours: 01795 418630 Outside office hours 999.	
2 Hazards identification		
2.1 Classification of the mixture		
According to Regulation (EC) No 1272/2008 (CLP)		
Hazard class	Hazard category	Hazard statements
Skin irritation	2	H315: Causes skin irritation
Serious eye damage /eye irritation	1	H318: Causes serious eye damage
Skin sensitisation	1B	H317: May cause an allergic skin reaction
Specific target organ toxicity single exposure respiratory tract irritation	3	H335: May cause respiratory irritation
2.2. Label elements		
According to Regulation (EC) No 1272/2008 (CLP)		

Hazard pictograms	
Signal word	DANGER: Contains Portland cement clinker
Hazard statements	H318 Causes serious eye damage H315 Causes skin irritation H317 May cause an allergic skin reaction H335 May cause respiratory irritation
Precautionary statements	P102 Keep out of reach of children P280 Wear protective gloves/protective clothing/eye protection/face protection P305+P351+P338+P310: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a doctor/physician. P302+P352+P333+P313: IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. P261+P304+P340+P312: Avoid breathing dust/fume/gas/mist/vapours/ spray. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a doctor/physician if you feel unwell. P501 Dispose of contents/container by hardening by the application of water and dispose of as concrete waste. Supplemental information Skin contact with wet cement, fresh concrete or mortar may cause irritation, dermatitis or burns. May cause damage to products made of aluminium or other non-noble metals.
2.3. Other hazards	
Alkaline when wet	Cement does not meet the criteria for Persistent, Bio-accumulative and Toxic (PBT) or very Persistent and very Bio-accumulative (vPvB) in accordance with Annex XIII of REACH (Regulation (EC) No 1907/2006). When cement reacts with water, for instance when making concrete or mortar, or when the cement becomes damp, a strong alkaline solution is produced. Due to the high alkalinity, wet cement may provoke skin and eye irritation. Cement is either naturally low in soluble chromium VI or reducing agents have been added to control the levels of sensitising soluble chromium (VI) to below 2 ppm (0.0002%) of the total dry weight of the cement ready for use.

3 Composition/information on ingredients						
3.1 Substances Not applicable						
3.2 Mixtures Contains less than 1% crystalline silica						
Substance	Concentration range, % by wt cement	Reg. No.	EC No.	CAS	Classification to Regulation (EC) No 1272/2008	
					Hazard class & category	Hazard statements
Portland cement clinker	5-100%	—(a)	266-043-4	65887-15-1	Skin irritation - 2	H315: Causes skin irritation
					Serious eye damage / eye irritation – 1	H318: Causes serious eye damage
					Skin sensitisation - 1	H317: May cause an allergic skin reaction
					Specific target organ toxicity single exposure respiratory tract irritation- 3	H335: May cause respiratory irritation
(a) According to Art 2.7(b) and Annex V.10 of EC Regulation 1907/2006 (REACH) Portland cement clinker is exempt from registration.						
4 First aid measures						
4.1 Description of first aid measures						
General		No personal protective equipment is needed for first aid responders. First aid workers should avoid contact with wet cement or mixtures containing wet cement, such as concrete, mortar or grout.				
Eye contact		Do not rub eyes in order to avoid possible cornea damage as a result of abrasion. Incline head to injured eye, open the eyelid or eyelids widely and flush immediately by thoroughly rinsing with plenty of clean water for at least 20 minutes. Ensure all particles are removed. Where present and if easy to do so remove contact lenses. Continue rinsing. Avoid flushing particles into unaffected eye. Where possible use isotonic water (0.9% NaCl). Contact a specialist of occupational medicine or an eye specialist, preferably an ophthalmologist.				

Skin contact	For dry cement, remove and rinse with water. For wet cement, wash skin with plenty of water. Remove contaminated clothing or accessories, particularly items that are in direct contact with skin, e.g. socks, footwear, vests and watches. Wash, clean and dry thoroughly before re-using them. Seek medical treatment in all cases of skin irritation, that is any sign of redness, rash, blistering or burns.
Inhalation	Move the person to fresh air and keep at rest in a position comfortable for breathing. Dust in throat and nasal passages should clear spontaneously. Seek medical attention if any irritation persists or develops, or if any discomfort, coughing or other symptoms persist.
Ingestion	Do not induce vomiting. If the person is conscious, wash out mouth with water and provide plenty of water to drink. Get immediate medical attention.
4.2 Most important symptoms and effects, both acute and delayed	
Eyes	Eye contact with dry cement, or wet cement, may cause serious and potentially irreversible injuries.
Skin	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. e.g. when kneeling in wet concrete even when wearing trousers.
Inhalation	May cause respiratory irritation. Repeated inhalation of dust of Common cements over a long period of time increases the risk of developing lung diseases.
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.
4.3 Indication of any immediate medical attention and special treatment needed	
Other Information	When contacting a doctor/physician, take this MSDS or the product label with you. IF IN EYES: Contact a specialist of occupational medicine or an eye specialist, preferably an ophthalmologist.
5 Firefighting measures	
5.1 Extinguishing media	
Common cements are not flammable. As appropriate for surrounding fire. Direct water jet may	

spread the fire.	
5.2 Special hazards arising from the substance or mixture	
Common cements are non-combustible and non-explosive and will not facilitate or sustain the combustion of other materials.	
5.3 Advice for firefighters	
Common cement poses no fire-related hazards. General measures for a fire are applicable: Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Do not breathe fumes. Keep containers cool by spraying with water if exposed to fire. Avoid run off to waterways and sewers.	
6 Accidental release measures	
6.1 Personal precautions, protective equipment and emergency procedures	
For non-emergency personnel	Wear protective equipment as described under Section 8 and follow the advice for safe handling and use given under Section 7.
For emergency responders	Emergency procedures are not required. However, respiratory protection is needed in situations with high dust levels.
6.2 Environmental precautions	
Do not wash cement down sewage and drainage systems or into bodies of water (e.g. streams).	
6.3 Methods and material for containment and cleaning up	
Dry cement	Use cleanup methods such as vacuum clean-up or vacuum extraction (Industrial portable units, equipped with high efficiency air filters (EPA and HEPA filters, EN 1822-1:2009) or equivalent technique) which do not cause airborne dispersion. Never use compressed air. Alternatively, wipe-up the dust by mopping, wet brushing or by using 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 cement).
	When wet cleaning or vacuum cleaning is not possible and only dry cleaning with brushes can be done, ensure that the workers wear the 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 Section 13.
Wet cement	Clean up wet cement and place in a container. Allow material to dry and solidify before disposal as described under Section 13.
6.4 Reference to other sections	
Other sections	Section 8 and 13

7 Handling and storage	
7.1 Precautions for safe handling	
Good practice	The “Good practice guides” which contain advice on safe handling practices can be found from: https://guide.nepsi.eu/ . 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.
Measures to prevent fire	Not applicable.
Measures to prevent aerosol and dust generation	Do not sweep. Use dry cleanup methods such as vacuum clean-up or vacuum extraction, which do not cause airborne dispersion.
Measures to protect the environment	Avoid release to the environment. Spillages or uncontrolled discharges into watercourses must be alerted to the appropriate regulatory body.
Information on general occupational hygiene	Do not handle or store near food and beverages or smoking materials. In dusty environment, wear dust mask and protective goggles. Use protective gloves to avoid skin contact.
7.2 Conditions for safe storage, including any incompatibilities	
Safe storage	Bulk cement should be stored in silos or flat stores 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, flat store, 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.
7.3 Specific end use(s)	
Cement	No additional information for the specific end uses (see section 1.2).
7.4 Control of soluble hexavalent chromium	

Soluble Cr (VI)	For cements treated with a Cr (VI) reducing agent according to the regulations given in Section 15, the effectiveness of the reducing agent diminishes with time. Therefore, cement bags and/or delivery documents will contain information on the packaging date, 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 0.0002% of the total dry weight of the cement ready for use, according to EN 196-10. They will also indicate the appropriate storage conditions for maintaining the effectiveness of the reducing agent.
8 Exposure controls/personal protection	
8.1 Control parameters	
Inhalable dust	The HSE WEL Long-term exposure limit is 10 mg/m ³ (8-hr TWA reference period)
Respirable dust	The HSE WEL Long-term exposure limit is 4 mg/m ³ (8-hr TWA reference period)
8.2 Exposure controls	
Operational measures	For plant operating within the store then air-conditioned dust free cab should be provided. When personnel are potentially exposed to dust then appropriate respiratory protection is to be used.
Respiratory protection	When a person is potentially exposed to dust levels above exposure limits, use appropriate respiratory protection. The type of respiratory protection should be adapted to the dust level and conform to the relevant EN standard, (e.g. EN 149, EN 140, EN 14387, EN 1827) or national standard. An overview of the APFs of different RPE (according to EN 529:2005) can be found in the glossary of MEASE [16]. Any RPE as defined above shall only be worn if the following principles are implemented in parallel: The duration of work (compare with “duration of exposure” above) should reflect the additional physiological stress for the worker due to the breathing resistance and mass of the RPE itself, due to the increased thermal stress by enclosing the head. In addition, it shall be considered that the worker’s capability of using tools and of communicating are reduced during the wearing of RPE. For reasons as given above, the worker should therefore be (i) healthy (especially in view of medical problems that may affect the use of RPE), (ii) have suitable facial characteristics reducing leakages between face and mask (in view of scars and facial hair). The recommended devices above which rely on a tight face seal will not provide the required protection unless they fit the contours of the face properly and securely. The employer and self-employed persons have legal responsibilities for the maintenance and issue of respiratory protective devices and the management of their correct use in the workplace. Therefore, they should define and document a suitable policy for a respiratory protective device programme including training of the workers.

Hand protection	Use gloves.
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 watertight, wear-and alkali-resistant protective gloves (e.g. 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.
Hygiene / Environmental	Remove contaminated clothing and wash skin thoroughly with soap and water after work. Wash hands after use.
Thermal Hazard	Not applicable.
Environmental exposure controls	Environmental exposure control for the emission of cement particles into air has to be in accordance with the available technology and regulations for the emission of general dust particles. Air: Environmental exposure control for the emission of cement particles into air has to be in accordance with the available technology and regulations for the emission of general dust particles. Water: Do not wash cement into sewage systems or into bodies of water, to avoid high pH. Above pH9 negative ecotoxicological impacts are possible. Soil and terrestrial environment: No special emission control measures are necessary for the exposure to the terrestrial environment.

9 Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical	Fine powder. Odourless. Specific surface area 300-500 m ² /kg.
Colour	Light to dark grey.
Odour	Odourless
Particle density	BS EN 1097-6 Nominal 2300 Kg/m ³ .
Bulk density	BS EN 1097-3 Nominal 1000 Kg/m ³ , 700 Kg/m ³ to 1400 Kg/m ³ .
pH	In water at 20°C, water-solid ratio 1:2: 11-13.5

Melting point	> 1250°C		
Flammability	Non-combustible solid which does not cause or contribute to fire through friction		
Solubility	In water at 20 °C: slight ~0.1-1.5g/l		
9.2 Other information – Not applicable			
10 Stability and reactivity			
10.1 Reactivity	Unreactive.		
10.2 Chemical stability	Dry cements are stable as long as they are properly stored (see Section 7) and compatible with most other building materials. They should be kept dry. Contact with incompatible materials should be avoided. Wet cement is alkaline and incompatible with acids, with ammonium salts, with aluminium or other non-noble metals. Cement dissolves in hydrofluoric acid to produce corrosive silicon tetrafluoride gas. Cement reacts with water to form silicates and calcium hydroxide. Silicates in cement react with powerful oxidizers such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride.		
10.3 Possibility of hazardous reactions	Cements do not generally cause hazardous reactions. When wet cement is mixed with finely divided aluminium then hydrogen is formed, where hydrogen is a flammable gas.		
10.4 Conditions to avoid	Humid conditions during storage may cause lump formation and loss of product quality.		
10.5 Incompatible materials	Acids, ammonium salts, aluminium or other non-noble metals. Uncontrolled use of aluminium powder in wet cement should be avoided as hydrogen is produced.		
10.6 Hazardous decomposition products	Cements will not decompose into any hazardous products.		
11 Toxicological information			
11.1 Information on toxicological effects			
Hazard class	Cat	Effect	Reference
Acute toxicity - dermal	—	Limit test, rabbit, 24 hours contact, 2,000 mg/kg body weight – no lethality. Based on available data, the classification criteria are not met.	[2]

Acute toxicity inhalation	—	No acute toxicity by inhalation observed. Based on available data, the classification criteria are not met.	[9]
Acute toxicity - oral	—	No indication of oral toxicity from studies with cement kiln dust. Based on available data, the classification criteria are not met.	Literature survey
Skin corrosion/irritation	2	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.	[2], Human experience
Serious eye damage/irritation	1	Common cements contain varying quantities of Portland cement clinker, fly ash, blast furnace slag, gypsum, natural pozzolans, burnt shale, silica fume and limestone. 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.	[10], [11]
Skin sensitisation	1B	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 [3].	[3], [4], [17]
Respiratory sensitisation	—	There is no indication of sensitisation of the respiratory system. Based on available data, the classification criteria are not met.	[1]

Germ cell mutagenicity	—	No indication. Based on available data, the classification criteria are not met.	[12], [13]
Carcinogenicity	—	No causal association has been established between Portland cement exposure and cancer. The epidemiological literature does not support the designation of Portland cement as a suspected human carcinogen. Portland cement is not classifiable as a human carcinogen (According to ACGIH A4: Agents that cause concern that they could be carcinogenic for humans but which cannot be assessed conclusively because of a lack of data. In vitro or animal studies do not provide indications of carcinogenicity that are sufficient to classify the agent with one of the other notations.). Based on available data, the classification criteria are not met.	[1], [14]
Reproductive toxicity	—	Based on available data, the classification criteria are not met.	No evidence from human experience
STOT-single exposure	3	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.	[1]
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. Based on available data, the classification criteria are not met.	[15]
Aspiration hazard	—	Not applicable as cements are not used as an aerosol.	

12 Ecological information

12.1 Toxicity	The product is not hazardous to the environment. Ecotoxicological tests with Portland cement on <i>Daphnia magna</i> [5] and <i>Selenastrum coli</i> [6] have shown little toxicological impact. Therefore, LC50 and EC50 values could not be determined [7]. There is no indication of sediment phase toxicity [8]. 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 Persistence and degradability	Not relevant. After hardening, cement presents no toxicity risks.
12.3 Bioaccumulative potential	Not relevant. After hardening, cement presents no toxicity risks.
12.4 Mobility in soil	Not relevant. After hardening, cement presents no toxicity risks.
12.5 Results of PBT and vPvB assessment	Not relevant. After hardening, cement presents no toxicity risks.
12.6 Other adverse effects	Not relevant.
13. Disposal considerations	
13.1 Waste treatment methods	Do not dispose of into sewage systems or surface waters. Product - cement that has exceeded its shelf life EWC entry: 10 13 99 (wastes not otherwise specified) (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 EWC entry: 10 13 06 (Other particulates and dust). 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". EWC entries 10 13 14 (waste from manufacturing of cement – waste concrete or concrete sludge) or 17 01 01 (construction and demolition wastes - concrete).
14. Transport information	
14.1 UN number	Not relevant.

14.2 UN proper shipping name	Not relevant.
14.3 Transport hazard class(es)	Not relevant.
14.4 Packing group	Not relevant.
14.5 Environmental hazards	Not relevant.
14.6 Special precautions for user	Not relevant.
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not relevant.
15, Regulatory information	
15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture	EU regulatory information 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). National regulatory information 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.
15.2 Chemical safety assessment	No additional regulatory requirements.
16 Other information	
16.1 Indication of changes	This Materials Safety Data Sheet includes the information required to meet the provisions of Regulation (EU) No. 1272/2008 according to guidelines published by CEMBUREAU.

16.2 Identified uses and use descriptors and categories	No chemical safety assessment has been carried out for this mixture by the supplier. As Portland cement clinker has not undergone an ECHA Registration a Chemical safety report has not been compiled. Therefore, no use descriptors and categories have been identified.
16.3 Abbreviations and acronyms	
ACGIH	American Conference of Industrial Hygienists
ADR/RID	European Agreements on the transport of Dangerous goods by Road/Railway
APF	Assigned protection factor
CAS	Chemical Abstracts Service
CLP	Classification, labelling and packaging (Regulation (EC) No 1272/2008)
COPD	Chronic Obstructive Pulmonary Disease
DNEL	Derived no-effect level
EC₅₀	Half maximal effective concentration
ECHA	European Chemicals Agency
EINECS	European Inventory of Existing Commercial chemical Substances
EPA	Type of high efficiency air filter
ES	Exposure scenario
EWC	European Waste Catalogue
FFP	Filtering face piece against particles (disposable)
FMP	Filtering mask against particles with filter cartridge GefStoffV Gefahrstoffverordnung
HEPA	Type of high efficiency air filter
H&S	Health and Safety
IATA	International Air Transport Association
IMDG	International agreement on the Maritime transport of Dangerous Goods
LC₅₀	Median lethal concentration

MEASE	substance exposure, EBRC Consulting GmbH for Eurometaux, http://www.ebrc.de/ebrc/ebrc-mease.php
MS	Member State
OELV	Occupational exposure limit value
PBT	Persistent, bio-accumulative and toxic
PNEC	Predicted no-effect concentration
PROC	Process category
RE	Repeated exposure
REACH	Registration, Evaluation and Authorisation of Chemicals
RPE	Respiratory protective equipment
SCOEL	Scientific Committee on Occupational Exposure Limit Values
SDS	Safety Data Sheet
SE	Single exposure
STP	Sewage treatment plant
STOT	Specific Target Organ Toxicity
TLV-TWA	Threshold Limit Value-Time-Weighted Average
TRG	Technische Regeln für Gefahrstoffe
VLE-MP	Exposure limit value-weighted average in mg by cubic meter of air
vPvB	Very persistent, very bio-accumulative
w/w	Weight by weight
WWTP	Waste water treatment plant

16.4 Key literature 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).
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 AnalyCenEcotox 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; Gminkietal, 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>.

[17] Occurrence of allergic contact dermatitis caused by chromium in cement. A review of epidemiological investigations, KåreLenvik, Helge Kjuus, NIOH, Oslo, December 2011.

16.5 Relevant H-Statements

H315: Causes skin irritation

H318: Causes serious eye damage

H317: May cause an allergic skin reaction H335:
May cause respiratory irritation

16.6 Training advice

In addition to health, safety and environmental training programs for their workers, companies must ensure that workers read, understand and apply the requirements of this SDS.

16.7 Further information

The data and test methods used for the purpose of classification of Common cements, are given or referred to in section 11.1.

16.8 Disclaimer

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/her own activities.

16.9 Standards and Regulations

BS EN 197-1:2011 Cement - Part 1: Composition, specifications and conformity criteria for common cement.

BS EN 1097-3:1998 Tests for mechanical and physical properties of aggregates - Determination of loose bulk density and voids

BS EN 1097-6:2022 Tests for mechanical and physical properties of aggregates - Determination of particle density and water absorption

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** (Text with EEA relevance).