# PRODUCT SAFETY DATA SHEET

This generic SDS is provided by MGS Ltd to give information to assist with material handling of the products listed which are conforming to Regulation (EC) No 1907 / 2006 (REACH)

| | |
|---|---|
| Doc No: | HS8 C42-036 |
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## SECTION 1: Identification of the substance / mixture and of the company / undertaking

### 1.1 Product Identifier

| | |
|---|---|
| **Product Name:** | **Portland Cement CEM I** |
| **Synonyms / Trade Name:** | Cement |

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

| | |
|---|---|
| **Recommended Use:** | Can be mixed with ballast, sand, and gravel for concreting or together with Bentonite for grouting. |
| **Restriction on Use:** | For industrial purposes only. |
| **Physical Properties:** | Grey, odourless powder. |

### 1.3 Details of the supplier of the Safety Data Sheet

| | |
|---|---|
| **Name:** | MGS Ltd |
| **Address:** | Rougham Industrial Estate, Bury St Edmunds, IP30 9ND |
| **Country:** | UK |
| **Phone N°:** | +44 1359 271167 |
| **Email:** | info@mgs.co.uk |
| **Website:** | www.mgs.co.uk |

### 1.4 Emergency telephone number

| | |
|---|---|
| Emergency telephone at the company | +44 7738 197 517 |
| Available outside office hours: | Yes |
| Language of the phone service: | English |
| E-mail of competent person responsible | darren.portway@mgs.co.uk |
| National contact: | Darren Portway |

## SECTION 2: Hazard Identification

### 2.1 Classification of the substance or mixture

According to Regulation (EC) No 1272/2008 (CLP)

**Hazard Statements**

| Hazard class | Hazard category | Hazard statements |
|---|---|---|
| Skin irritation | 2 | H315: Causes skin irritation |
| Serious eye damage/eye irritation | 1 | H318: Causes serious eye damage |
| Specific target organ toxicity single exposure | 3 | H335: May cause respiratory irritation |

### 2.2 Label elements





Signal word: Danger

| **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.<br>Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or 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. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell. |
| P501 | Dispose of product/packaging by hardening with the application of water and dispose of as concrete waste. |
| Other 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**

Cement does not meet the criteria for PBT or 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.

The product contains chromate reducing agent. As a result, the content of soluble chromium (VI) is less than 2 ppm. If the storage conditions are not appropriate or the storage period is exceeded, the effectiveness of the reducing agent can diminish, and the cement can become skin sensitizing.

## SECTION 3: Composition / Information on Ingredients

**3.1 Substances**

Not applicable.

**3.2 Mixtures**

Common cement types according to the EN 197-1 standard: CEM I 52,5N
CEM I 52,5R CEM I 42,5N
CEM II/A-LL 32,5R CEM II/A-LL 42,5N CEM II/A-LL 52,5N, CEM III A 42,5N LH
which contain less than 1% crystalline silica and :

| Substance | Concentration Range (W/W in cement) | Registration Number | EINECS | CAS | Classification Regulation 1272/2008 | |
|---|---|---|---|---|---|---|
| | | | | | Hazard Class | Hazard Statement |
| Portland cement clinker | 5-100% | (a) | 266-043-4 | 65997-15-1 | STOT SE 3 | H335: May cause respiratory irritation |
| | | | | | 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 |
| Flue dust (b) | 0-5% | UK-01-6874117423-6-0001 | 270-659-9 | 68475-76-3 | STOT SE 3 | H335: May cause respiratory irritation |
| | | | | | 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 |

(a) Portland cement clinker is, according to Art. 2.7(b) and Annex V.10 of EC Regulation 1907/2006 (REACH), exempt from the registration requirement.

(b) "Flue Dust" is a substance (UVCB), arising during production of cement clinker; other conventional names are cement kiln dust, bypass meal, filter dust, ESP dust and clinker dust.

## SECTION 4: First Aid Measures

### 4.1 Description of first aid measures

**General notes**

No personal protective equipment is needed for first aid responders. First aid workers should avoid contact with wet cement or wet cement containing mixtures.

| | |
|---|---|
| **Contact with eyes:** | Do not rub eyes in order to avoid possible cornea damage as a result of mechanical stress. Remove contact lenses if any. Incline head to injured eye, open the eyelid(s) widely and flush eye(s) immediately by thoroughly rinsing with plenty of clean water for at least 20 minutes to remove all particles. Avoid flushing particles into uninjured eye. If possible, use isotonic water (0.9% NaCl). Contact a specialist of occupational medicine or an eye specialist. |

| | |
|---|---|
| **Contact with skin:** | For dry cement, remove and rinse abundantly with water. For wet cement, wash skin with plenty of water. Remove contaminated clothing, footwear, watches, etc. and clean thoroughly before re-using them. Seek medical treatment in all cases of irritation or burns. |
| **Following inhalation:** | Move the 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 persist. |
| **Following ingestion:** | Do not induce vomiting. If the person is conscious, wash out mouth with water and give plenty of water to drink. Get immediate medical attention or contact the anti-poison centre. |

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

| | |
|---|---|
| **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 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). For more details see Reference (1). |
| **Inhalation:** | Repeated inhalation of dust of common cements over a long period of time increases the risk of developing lung diseases. |
| **Environment:** | Under normal use, common cement is not hazardous to the environment. |

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

When contacting a physician, take this MSDS with you.

## SECTION 5: Fire Fighting Measures

**5.1 Extinguishing media**

Cements are not flammable.

**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 fire fighters**

Cement poses no fire-related hazards. No need for special protective equipment for fire fighters.

## SECTION 6: Accidental Release Measures

**6.1 Personal precautions, protective equipment, and emergency procedures**

**6.1.1 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.

**6.1.2 For emergency responders**

Emergency procedures are not required. However, respiratory protection is needed in situations with high dust levels. Contact should be avoided with wet cement or wet cement containing mixtures.

**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**

Collect the spillage in a dry state if possible.

**Dry cement**

Use clean up 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 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 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**

See Sections 8 and 13 for more details.

## SECTION 7: Handling & Storage

**7.1 Precautions for safe handling**

For more information, refer to the practice guidelines 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. These safe handling practices It can be found via the following link:

http://www.nepsi.eu/agreement-good-practice-guide/good-practice-guide.aspx.

**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 safety 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)**

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

**7.4 Control of 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.

## SECTION 8: Exposure Controls / Personal Protection

**8.1 Control parameters**

**8.1.1 Exposure limit values (Workplace Exposure Limits WEL)**

| Substance | CAS | Long Term Exposure Limit (8hr TWA Reference Method) | Legal Reference |
|---|---|---|---|
| Portland Cement Clinker | 65997-15-1 | - | COSHH 2002 & HSE EH40/2005 |
| Inhalable dust | | 10 mg/m$^3$ | |
| Respirable dust | | 4 mg/m$^3$ | |
| Recommendations given here are based on a DNEL level of 3mg/m3. | | | |

**8.2 Exposure controls**

For each individual PROC, users can choose from either option A) or B) in the table above, according to what is best suited to their specific situation. If one option is chosen, then the same option has to be chosen in the table from section "8.2.2 Individual protection measures such as personal protection equipment" - Specification of respiratory protective equipment. Only combinations between A) – A) and B) – B) are possible.

**8.2.1 Appropriate engineering controls**

Measures to reduce generation of dust and to avoid dust propagating in the environment such as dedusting, exhaust ventilation and dry clean-up methods which do not cause airborne dispersion.

| Exposure Scenario | PROC* | Exposure | Technical Installation | Efficiency |
|---|---|---|---|---|
| Industrial manufacture/formulation of hydraulic building and construction materials | 2, 3 | Duration is not restricted (up to 480 minutes per shift, 5 shifts a week) | Not required | - |
| | 14, 26 | | A) Not required **or**<br>B) Generic local exhaust ventilation | -<br>78% |
| | 5, 8b, 9 | | A) General ventilation **or**<br>B) Generic local exhaust ventilation | 17%<br>78% |
| Industrial uses of dry hydraulic building and construction materials (indoor, outdoor) | 2 | | Not required | - |
| | 14, 22, 26 | | A) Not required **or**<br>B) Generic local exhaust ventilation | -<br>78% |
| | 5, 8b, 9 | | A) General ventilation **or**<br>B) Generic local exhaust ventilation | 17 %<br>78 % |
| Industrial uses of wet suspension of hydraulic building and construction materials | 7 | | A) Not required **or**<br>B) Generic local exhaust ventilation | -<br>78% |
| | 2, 5, 8b, 9, 10, 13, 14 | | Not required | - |
| **Exposure Scenario** | **PROC*** | **Exposure** | **Technical Installation** | **Efficiency** |
| Professional use of dry hydraulic building and construction material (indoor, outdoor) | 2 | Duration is not restricted (up to 480 minutes per shift, 5 shifts a week | Not required | - |
| | 9, 26 | | A) Not required **or**<br>B) Generic local exhaust ventilation | -<br>72 % |
| | 5, 8a, 8b, 14 | | A) Not required **or**<br>B) Integrated local exhaust ventilation | -<br>87 % |
| | 19 | | Localised controls are not applicable, process only in good ventilated rooms or outdoor | - |
| Professional uses of wet suspensions of hydraulic building and construction materials | 11 | | A) Not required or<br>B) Generic local exhaust ventilation | -<br>72 % |
| | 2, 5, 8a, 8b, 9, 10, 13, 14, 19 | | Not required | - |

**8.2.2 Individual protection measures such as personal protection equipment**

**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. Before starting to work with cement, apply a barrier cream 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.

| | | |
|---|---|---|
| **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 watertight, wear and alkali resistant gloves (e.g. Nitrile soaked cotton gloves with UKCA Marking) internally lined with cotton, boots, closed long-sleeved protective clothing as well as 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. Regarding gloves, investigations have proven that nitrile impregnated cotton gloves (layer thickness of c. 0.15mm) provide sufficient protection over a period of **480 minutes**, subject to normal wear and tear which can be task dependent. Always change damaged or soaked gloves immediately. Always have spare gloves in ready supply. In some circumstances, such as when laying concrete or screed, waterproof trousers or kneepads are necessary. | <br> |
| **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. |  |
| **Thermal Hazards** | Not applicable. | |

| Use | PROC* | Exposure | Specification of respiratory protective equipment (RPE) | RPE efficiency - assigned protection factor (APF) |
|---|---|---|---|---|
| Industrial manufacture/formulation of hydraulic building and construction materials | 2, 3 | Duration is not restricted (up to 480 minutes) | Not required | - |
| | 14, 26 | | A) P1 mask (FF, FM) **or**<br>B) Not required | APF = 4<br>- |
| | 5, 8b, 9 | | A) P2 mask (FF, FM) **or**<br>B) P1 mask (FF, FM) | APF = 10<br>APF = 4 |
| Industrial uses of dry hydraulic building and | 2 | | Not required | - |
| | 14, 22, 26 | | A) P1 mask (FF, FM) **or**<br>B) Not required | APF = 4<br>- |

| | | | | |
|---|---|---|---|---|
| construction materials (indoor, outdoor) | 5, 8b, 9 | | A) P2 mask (FF, FM) **or**<br>B) P1 mask (FF, FM) | APF = 10<br><br>APF = 4 |
| Industrial uses of wet suspension of hydraulic building and construction materials | 7 | | A) P1 mask (FF, FM) **or**<br>B) Not required | APF = 4<br><br>- |
| | 2, 5, 8b, 9, 10, 13, 14 | | Not required | - |
| Professional use of dry hydraulic building and construction material (indoor, outdoor) | 2 | | P1 mask (FF, FM) | APF = 4 |
| | 9, 26 | | A) P2 mask (FF, FM) **or**<br>B) P1 mask (FF, FM) | APF = 10<br><br>APF = 4 |
| | 5, 8a, 8b, 14 | | A) P3 mask (FF, FM) **or**<br>B) P1 mask (FF, FM) | APF = 20<br><br>APF = 4 |
| | 19 | | P2 mask (FF, FM) | APF = 10 |
| Professional uses of wet suspensions of hydraulic building and construction materials | 11 | | A) P2 mask (FF, FM) **or**<br>B) P1 mask (FF, FM) | APF = 10<br><br>APF = 4 |
| | 2, 5, 8a, 8b, 9, 10, 13, 14, 19 | | Not required | - |

* PROC's are identified uses and defined in section 16.2.

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.

**8.2.3 Environmental exposure controls**

**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. Storing, loading or unloading cement in bulk prior to further transportation in bulk, blending cement in bulk or using cement in bulk other than at a construction site, including the bagging of cement and cement mixtures, the batching of ready-mixed concrete and the manufacture of concrete blocks and other cement products, requires a permit under the Environmental Permitting Regulations 2010.

**Water**

Do not wash cement into sewage systems or into bodies of water, to avoid high pH. Above pH 9 negative eco-toxicological impacts are possible.

**Soil and terrestrial environment**

No special emission control measures are necessary for the exposure to the terrestrial environment

## SECTION 9: Physical and Chemical Properties

### 9.1 Information on basic physical and chemical properties

| | |
|---|---|
| **Appearance:** | Dry cement is a finely ground solid inorganic material (grey or white powder). Main particle size: 5-30 µm. |
| **Odour:** | Odourless |
| **Odour threshold:** | No odour threshold, odourless. |
| **pH:** | (T = 20°C in water, water-solid ratio 1:2): 11-13.5 |
| **Melting point:** | >1,250°C |
| **Initial boiling point and boiling range:** | Not applicable as under normal atmospheric conditions, melting point >1,250°C |
| **Flash point:** | Not applicable as is not a liquid. |
| **Evaporation rate:** | Not applicable as is not a liquid. |
| **Flammability (solid gas):** | Not applicable as is a solid which is non-combustible and does not cause or contribute to fire through friction. |
| **Upper / Lower Flammability or explosive limits:** | Not applicable as is not a flammable gas. |
| **Vapour pressure:** | Not applicable as melting point >1,250°C |
| **Vapour density:** | Not applicable as melting point >1,250°C |
| **Relative density:** | 2.75-3.20; Apparent density: 0.9-1.5 g/cm³ |
| **Solubility(ies) in water:** | (T = 20°C): slight (0.1-1.5 g/l) |
| **Partition coefficient:** | n-octanol/water: Not applicable as is inorganic mixture. |
| **Auto-ignition temperature:** | Not applicable (no pyrophoricity – no organo-metallic, organo-metalloid or organo-phosphine bindings or of their derivatives, and no other pyrophoric constituent in the composition). |
| **Decomposition temperature:** | Not applicable as no organic peroxide present. |
| **Viscosity:** | Not applicable as not a liquid. |
| **Explosive properties:** | Not applicable. Not explosive or pyrotechnic. Not in itself capable by chemical reaction of producing gas at such temperature and pressure and at such a speed as to cause damage to the surroundings. Not capable of a self- sustaining exothermic chemical reaction. |
| **Oxidising properties:** | Not applicable as does not cause or contribute to the combustion of other materials. |

### 9.2 Other information

Not applicable.

## SECTION 10: Stability and Reactivity

### 10.1 Reactivity

When mixed with water, cements will harden into a stable mass that is not reactive in normal environments.

### 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 cause hazardous reactions.

### 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.

## SECTION 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. | Literature survey |
| | | Based on available data, the classification criteria are not met. | |
| 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 |

| Hazard class | Cat | Effect | Reference |
|---|---|---|---|
| Serious eye damage/irritation | 1 | Portland cement clinker caused a mixed picture of corneal effects and the calculated irritation index was 128. Common cements contain varying quantities of Portland cement clinker, blast furnace slag, gypsum 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 | 1 | 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 [Reference (3)]. | (3), (4) |
| 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.<br>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)<br>(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 | - | Long term exposure to respirable cement dust above the occupational exposure limit may lead to coughing, shortness of breath and chronic obstructive changes in the respiratory tract. No chronic effects were observed at low concentrations. Based on available data, the classification criteria are not met. | (15) |
| Aspiration hazard | - | Not applicable as cements are not used as an aerosol. | |

Apart from skin sensitisation, Portland cement clinker and common cements have the same toxicological and eco-toxicological properties.

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.

## SECTION 12: Ecological Information

### 12.1 Toxicity

The product is not hazardous to the environment. Ecotoxicological tests with Portland cement on Daphnia magna [Reference (5)] and Selenastrum coli [Reference (6)] have shown little toxicological impact. Therefore LC50 and EC50 values could not be determined [Reference (7)]. There is no indication of sediment phase toxicity [Reference (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 Bio accumulative 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 Endocrine disrupting properties**

Not relevant.

**12.6 Other adverse effects**

Not relevant.

## SECTION 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".
**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).
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.
**Packaging**
EWC entries:15 01 01 (waste paper and cardboard packaging).15 01 02 (Plastic packaging) Completely empty the packaging and process it according to local legislation.

## SECTION 14: Transportation 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 precaution for user**

Not relevant

**14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not relevant

## 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)

**National regulatory information**

CONIAC Health Hazard Information Sheet No 26 (CEMENT) Health & Safety at Work, etc. Act 1974
Control of Substances Hazardous to Health Regulations (COSHH) 2002 Control of Substances Hazardous to Health (Amendment) Regulations 2004 Environmental Protection Act 1990
HSE Guidance Note EH40 (Workplace Exposure Limits)

Any authorised manual on First Aid by St.John's/St. Andrews/Red Cross Manual Handling Operations Regulations 1992 (as amended)

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)

## 15.2 Chemical safety assessment

No chemical safety assessment has been carried out for this mixture by the supplier.

## SECTION 16: Other Information

### 16.1 Indication of changes

This MSDS has been reviewed and rewritten to reflect the new structure to meet changes in legislation to the requirements of the CLP regulations (Regulation EC 1272/2008) according to guidelines published by CEMBUREAU, the representative organisation of the cement industry in Europe.

### 16.2 Identified uses and use descriptors and categories

The table below gives an overview of all relevant identified uses of cement or cement containing hydraulic binders. All the uses have been grouped in these identified uses because of the specific conditions of exposure for human health and environment. For each specific use, a set of risk management measures or localised controls has been derived (see section 8) which need to be put in place by the user of cement or cement containing hydraulic binders to bring the exposure to an acceptable level.

| PROC | Identified Uses - Use Description | Manufacture/ Formulation of building and construction materials | Professional/ Industrial use of building and construction materials |
|---|---|---|---|
| 2 | Use in closed, continuous process with occasional controlled exposure, e.g. industrial or professional manufacture of hydraulic binders. | X | X |
| 3 | Use in closed batch process, e.g. industrial or professional manufacture of ready-mix concrete. | X | X |
| 5 | Mixing or blending in batch process for formulation of mixtures and articles, e.g. industrial or professional manufacture of pre-cast concrete. | X | X |
| 7 | Industrial spraying, e.g. Industrial use of wet suspensions of hydraulic binders by spraying | | X |
| 8a | Transfer of substance or mixture from/to vessels/large containers at non-dedicated facilities, e.g. use of cement in bags to prepare mortar | | X |

| | | | |
|---|---|---|---|
| 8b | Transfer of substance or mixture from/to vessels/large containers at dedicated facilities, e.g. filling of silos or road/ rail tankers at cement plants. | X | X |
| 9 | Transfer of substance or mixture into small containers, e.g. filling of cement bags in cement plants. | X | X |
| 10 | Roller application or brushing, e.g. Products to improve adherence between building surfaces and finishing products | | X |
| 11 | Non-Industrial spraying, e.g. professional use of wet suspensions of hydraulic binders by spraying. | | X |
| 13 | Treatment of articles by dipping and pouring, e.g. covering of construction product with a layer to improve the performance of the product. | | X |
| 14 | Production of mixtures or articles by tabletting, compression extrusion, palletisation, e.g. production of floor tiling. | X | X |
| 19 | Hand-mixing with intimate contact and only PPE available, e.g. mixture of wet hydraulic binder on a construction site. | | X |
| 22 | Potentially closed processing operations with minerals/metals at elevated temperature in Industrial setting, e.g. production of bricks. | | X |
| 26 | Handling of solid inorganic substances at ambient temperature, e.g. mixture of wet hydraulic binders. | X | X |

**16.3 Abbreviations and acronyms**

| | |
|---|---|
| ACGIH | American Conference of Governmental 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 Chemical Agency |
| EINECS | European Inventory of Existing Commercial Chemical Substance |
| EPA | Type of high efficiency air filter |
| ES | Exposure scenario |
| EWC | European Waste Catalogue |
| FFP | Filtering facepiece against particles (disposable) |
| FMP | Filtering mask against particles with filter cartridge |
| GefStoffV | Gefahstroffverodnung |
| 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 dose |
| MEASE | Metals estimation and assessment of substance exposure. EBRC Consulting GmBH for Eurometaux http://www.ebrc.de/industrial-chemicals-reach/projects-and-references/mease.php |
| MS | Member State |
| MSDS | Material Safety Data Sheet |
| OELV | Occupational exposure limit value |
| PBT | Persistent bio-accumulative and toxic |
| PNEC | Predicted non-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 |
| VLE-MP | Exposure limit value-weighted average in mg by cubic meter of air |
| vPvB | Very persistent, very bio-accumulative |
| WEL | Workplace exposure limit |
| w/w | Weight by weight |
| WWTP | Waste water treatment plant |

**16.4 Key literature references and sources of data.**


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|---|---|
| 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). |

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|---|---|
| 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-fi ne in rats, July 2010 – unaudited draft approved. |
| 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. |
| 17 | Occurrence of allergic contact dermatitis caused by chromium in cement. A review of epidemiological investigations, Kåre Lenvik, Helge Kjuus, NIOH, Oslo, December 2011. |


**16.5 Relevant H Statements**

H318: Causes serious eye damage
H315: Causes skin irritation
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.

**Disclaimer:**

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty guarantee or representation is made to its accuracy, reliability of completeness. It is the user's responsibility to satisfy themselves as to the suitability of such information for their own particular use.