

Safety Data Sheet

Revised: 21/06/2017

Revision: 5

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

1.1 Product identifier

According to EN 998-1:

Rendering and plastering mortar :

Π240, Σ340, Φ610, Φ510, G10 Φ510, Φ310, Π220, Σ312, M610, M510, Σ320, E200, E240, Φ505, FW120, G120, Ergosol

According to EN 998-2:

Masonry mortar :

K140, K640

According to EN 13813:

Screed material and floor screeds :

Δ440, Δ420, C25

According to EN 12004:

Adhesives for ceramic tiles and thermal insulation boards

FW120, G120, Sterea, Sterea Pro, Sterea Flex.

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

Ready-mix dry mortars after mixing with water are used for various uses such as coatings, construction, floor screeds, adhesive for thermal insulation boards and tile adhesive. These materials are produced in industrial facilities for use in construction and generally in civil engineering projects.

The various types of mortars are also used by professionals and end consumers in construction work indoors and outdoors. More information in chapter 16.2.

1.3. Details of the supplier of the safety data sheet

Company name: **Titan Cement Co, S.A.**Full address: **22A CHALKIDOS Str., 111 43 ATHENS, GREECE**

Telephone number: +302102591543

E-mail address of competent person responsible for the SDS: Dimitris Periklopoulos (periklopoulosd@titan.gr)

1.4. Emergency telephone number

Poison Centre: +302107793777

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

2.1.1 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

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

Contains Portland Cement EC: 266-043-4; CAS: 65997-15-1

Hazard pictograms



Signal word

Danger

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 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/fume/gas/mist/vapours/spray. 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 contents/container according to local legislation.

Supplemental information

Skin contact with wet mortar, may cause irritation, dermatitis or burns.
May cause damage to products made of aluminium or other non-noble metals.

2.3. Other hazards

Dry mix mortar does not meet the criteria for PBT or vPvB in accordance with Annex XIII of REACH (Regulation (EC) No 1907/2006).

Mortar dust can irritate the human respiratory system.

When the Dry mix mortar is mixed with water, e.g. during the production of plaster, or when the mortar is wet, a strong alkaline environment is created. Due to the high alkalinity of the wet mortar, it can cause skin and eye irritation.

Dry mix mortar 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 2mg/kg (0.0002%) of the total dry weight of the cement ready for use, according to legislation specified under Section 15.

SECTION 3: Composition/information on ingredients

3.1. Substances

Not Applicable as the product is a mixture, not a substance.

3.2. Dry mix mortar Composition

Dry mix mortars contain aggregates, limestone or marble, white or grey cement, lime and admixtures in various proportions (<5%).

| <i>Main Constituents of Dry Mix Mortar</i> | | | | | |
|--|----------------------|-------------------|--------------------------|-----------------------------------|------------------------------------|
| Nomenclature IUPAC | EINECS Number | CAS Number | Molecular Formula | Typical Composition (%w/w) | Range of composition (%w/w) |
| Limestone Aggregates | - | - | - | 80 | 0 – 92 |
| Marble Aggregates | - | - | - | 80 | 0 - 93 |
| Calcium Hydroxide | 215-137-3 | 1305-62-0 | Ca(OH) ₂ | 1 | 0 – 4 |
| Portland Cement | 266-043-4 | 65997-15-1 | - | 10 | 0 - 30 |

3.3. Substances that may cause harm to health

| Constituent | EINECS Number | CAS Number | REACH Registration Number | Classification according to Regulation 1272/2008/EC | |
|--------------------|----------------------|-------------------|----------------------------------|--|------------------------------------|
| | | | | Hazard class & category | Hazard statements H phrases |
| Calcium Hydroxide | 215-137-3 | 1305-62-0 | 01-2119475151-45-0193 | Skin irritation, 2 Serious eye damage/eye irritation, 1 Specific target organ toxicity single exposure respiratory tract irritation, 3 | H 315 H318 H335 |
| Portland Cement | 266-043-4 | 65997-15-1 | exempted from registration* | Skin irritation, 2 Skin sensitisation, 1B Serious eye damage/eye irritation, 1 Specific target organ toxicity single exposure respiratory tract irritation, 3 | H 315 H317 H318 H335 |

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 Dry Mix Mortar containing mixtures.

Following contact with eyes

Do not rub eyes in order to avoid possible corneal damage by 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.

Following skin contact

For Dry Mix Mortar, remove and rinse abundantly with water.

For wet/damp Dry Mix Mortar, 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 Dry Mix Mortar dust (dry or wet) may cause serious and potentially irreversible injuries.

Skin: Dry Mix Mortar 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 Dry Mix Mortar may cause serious burns because they develop without pain being felt.

For more details see Reference (1).

Inhalation: Repeated inhalation of Dry Mix Mortar dust over a long period of time increases the risk of developing lung diseases.

Environment: Under normal use, Dry Mix Mortar is not hazardous to the environment.

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

When contacting a physician, take this SDS with you.

SECTION 5: Fire-fighting measures

5.1. Extinguishing media

Dry Mix Mortar is not flammable.

5.2. Special hazards arising from the substance or mixture

Dry Mix Mortars 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.

6.2. Environmental precautions

Do not wash Dry Mix Mortar 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 Mix Mortar

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 Dry Mix Mortar).

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 Dry Mix Mortar

Clean up wet Dry Mix Mortar 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 and storage

7.1. Precautions for safe handling

7.1.1 Protective measures

Follow the recommendations as given under Section 8.
To clean up Dry Mix Mortar, see Subsection 6.3.

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.

More information about safe handling practices can be found via the following link: <http://www.nepsi.eu/agreement-good-practice-guide/good-practice-guide.aspx>.

Measure to protect the environment

No particular measures.

7.1.2 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

Bulk Dry Mix Mortar 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 Dry Mix Mortar without taking the proper security measures. Dry Mix Mortar can build-up or adhere to the walls of a confined space. The Dry Mix Mortar 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 Dry Mix Mortar 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 Dry Mix Mortar 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, Dry Mix Mortar 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 (Ref.16)**8.1. Control parameters**

According to Greek legislation the TLV (total inhalable dust) is 10mg/m³ for total dust (5mg/m³ for respirable dust). Has to be defined according to local legislation.

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.

| Use | PROC* | Expo- sure | Localised controls | 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 | | A) not required or B) generic local exhaust ventilation | - 78 % |
| | 5, 8b, 9 | | A) general ventilation or B) generic local exhaust ventilation | 17 % 78 % |
| Industrial uses of dry hydraulic building and construction materials (indoor, outdoor) | 2 | | not required | - |
| | 14 | | A) not required or B) generic local exhaust ventilation | - 78 % |
| | 5, 8b, 9 | | A) general ventilation or B) generic local exhaust ventilation | 17 % 78 % |
| Industrial uses of wet suspension of hydraulic building and construction materials | 7 | | A) not required or B) generic local exhaust ventilation | - 78 % |
| | 2, 5, 8b, 9, 10, 13, 14 | | not required | - |
| Professional use of dry hydraulic building and construction material (indoor, outdoor) | 2 | | not required | - |
| | 9 | | A) not required or B) generic local exhaust ventilation | - 72 % |
| | 5, 8a, 8b, 14 | | A) not required or B) integrated local exhaust ventilation | - 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 B) generic local exhaust ventilation | - 72 % | |
| | 2, 5, 8a, 8b, 9, 10, 13, 14, 19 | not required | - | |

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

8.2.2 Individual protection measures such as personal protection equipment

General: During work avoid kneeling in fresh mortar 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 Dry Mix Mortar to avoid contact with skin or mouth.

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

Immediately after working with Dry Mix Mortar, 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 Dry Mix Mortar 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 (e.g. barrier creams) to protect the skin from prolonged contact with wet Dry Mix Mortar. Particular care should be taken to ensure that wet Dry Mix Mortar 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.

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, (EN 149) 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 per shift, 5 shifts a week) | not required | - |
| | 14, | | A) FFP1 mask or B) not required | APF = 4 - |
| | 5, 8b, 9 | | A) FFP2 mask or B) FFP1 mask | APF = 10 APF = 4 |
| Industrial uses of dry hydraulic building and construction | 2 | | not required | - |
| | 14 | | A) FFP1 mask | APF = 4 |

| Use | PROC* | Exposure | Specification of respiratory protective equipment (RPE) | RPE efficiency - assigned protection factor (APF) |
|--|---------------------------------|----------|---|---|
| materials (indoor, outdoor) | | | or B) not required | - |
| | 5, 8b, 9 | | A) FFP2 mask or B) FFP1 mask | APF = 10 APF = 4 |
| Industrial uses of wet suspension of hydraulic building and construction materials | 7 | | A) FFP1 mask or B) not required | APF = 4 - |
| | 2, 5, 8b, 9, 10, 13, 14 | | not required | - |
| Professional use of dry hydraulic building and construction material (indoor, outdoor) | 2 | | FFP1 mask | APF = 4 |
| | 9 | | A) FFP2 mask or B) FFP1 mask | APF = 10 APF = 4 |
| | 5, 8a, 8b, 14 | | A) FFP3 mask or B) FFP1 mask | APF = 20 APF = 4 |
| | 19 | | FFP2 mask | APF = 10 |
| Professional uses of wet suspensions of hydraulic building and construction materials | 11 | | A) FFP2 mask or B) FFP1 mask | APF = 10 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 Dry Mix Mortar 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 Dry Mix Mortar into sewage systems or into bodies of water, to avoid high pH. Above pH 9 negative ecotoxicological 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

This information applies to the whole mixture.

- (a) Appearance: Dry Mix Mortar is a grey or white, granular inorganic solid material. Main particle size: 0-4 mm (Depending on the product type).
- (b) Odour: Odourless
- (c) Odour threshold: no odour threshold, odourless
- (d) pH: (T = 20°C in water, water-solid ratio 1:2): 11-13.5
- (e) Melting point: > 1 250 °C
- (f) Initial boiling point and boiling range: Not applicable as under normal atmospheric conditions, melting point >1 250°C
- (g) Flash point: Not applicable as is not a liquid
- (h) Evaporation rate: Not applicable as is not a liquid
- (i) Flammability (solid, gas): Not applicable as is a solid which is non combustible and does not cause or contribute to fire through friction
- (j) Upper/lower flammability or explosive limits: Not applicable as is not a flammable gas
- (k) Vapour pressure: Not applicable as melting point > 1250 °C
- (l) Vapour density: Not applicable as melting point > 1250 °C
- (m) Relative density: 1,4-1,60; Apparent density: 1,7-2,2g/cm³
- (n) Solubility(ies) in water (T = 20 °C): slight (0.1-1.5 g/l)
- (o) Partition coefficient: n-octanol/water: Not applicable as is inorganic substance
- (p) 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)
- (q) Decomposition temperature: Not applicable as no organic peroxide present
- (r) Viscosity: Not applicable as not a liquid
- (s) Explosive properties: Not applicable. Not explosive or pyrotechnic. Not in itself capable of producing gas by chemical reaction at temperature and pressure and at a speed as to cause damage to the surroundings. Not capable of a self-sustaining exothermic chemical reaction.
- (t) 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, cement will harden into a stable mass that is not reactive in normal environments.

10.2. Chemical stability

Dry Mix Mortar 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 Dry Mix Mortar is alkaline and incompatible with acids, with ammonium salts, with aluminium or other non-noble metals.

10.3. Possibility of hazardous reactions

Not applicable.

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.

10.6. Hazardous decomposition products

Dry Mix Mortar will not decompose into any hazardous products.

SECTION 11: Toxicological information

11.1. Information on toxicological effects: Portland Cement

| 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 | 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, fly ash, gypsum, natural pozzolans 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 [Reference (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 cement exposure and cancer. The epidemiological literature does not support the designation of cement | (1) |

| Hazard class | Cat | Effect | Reference |
|------------------------|-----|---|-----------------------------------|
| | | as a suspected human carcinogen 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. | (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 cement is not used as an aerosol. | |

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

11.2. Information on toxicological effects: Calcium Hydroxide

| | |
|------------------------|--|
| Absorption | The primary health effect of calcium dihydroxide is local irritation due to a pH shift. Therefore, absorption is not a relevant parameter for the effects assessment. |
| Acute toxicity | Calcium dihydroxide is not acutely toxic. |
| Oral | LD50 > 2000 mg/kg bw (OECD 425, rat) |
| Dermal | LD50 > 2500 mg/kg bw (OECD 402, rabbit) |
| Inhalation | No data available. Classification for acute toxicity is not warranted. For irritating effects to the respiratory tract see below. |
| Irritation/ corrosion | <i>Eye irritation</i> Calcium dihydroxide entails a risk of serious damage to the eye (eye irritation studies (in vivo, rabbit)). <i>Skin irritation</i> Calcium dihydroxide is irritating to skin (in vivo, rabbit) <i>Respiratory irritation</i> From human data it is concluded that Ca(OH) ₂ is irritating to the respiratory tract. Based on experimental results, calcium dihydroxide requires classification as irritating to skin [R38, irritating to skin; Skin Irrit 2 (H315 – Causes skin irritation)] and as severely irritating to the eye [R41, Risk of serious damage to eye; Eye Damage 1 (H318 - Causes serious eye damage)]. As summarised and evaluated in the SCOEL recommendation (Anonymous, 2008), based on human data it is proposed to classify calcium dihydroxide as irritating to the respiratory system [R37, Irritating to respiratory system; STOT SE 3 (H335 – May cause respiratory irritation)]. |
| Sensitisation | No data available. Calcium dihydroxide is considered not to be a skin sensitiser, based on the nature of the effect (pH shift) and the essentiality of calcium for human nutrition. Classification for sensitisation is not warranted. |
| Repeated dose toxicity | Toxicity of calcium via the oral route is addressed by upper intake levels (UL) for adults determined by the Scientific Committee on Food (SCF), being UL = 2500 mg/d, corresponding to 36 mg/kg bw/d (70 kg person) for calcium. Toxicity of Ca(OH) ₂ via the dermal route is not considered as relevant in view of the anticipated insignificant absorption through skin and due to local irritation as the primary health effect (pH shift). Toxicity of Ca(OH) ₂ via inhalation (local effect, irritation of mucous membranes) is addressed by an 8-h TWA determined by the Scientific Committee on Occupational Exposure Limits (SCOEL) of 1 mg/m ³ respirable dust. Therefore, classification of Ca(OH) ₂ for toxicity upon prolonged exposure is not required. |
| Mutagenicity | Bacterial reverse mutation assay (Ames test, OECD 471): Negative. Mammalian chromosome aberration test: Negative. In view of the omnipresence and essentiality of Ca and of the physiological non-relevance of any pH shift induced by lime in aqueous media, lime is obviously void of any genotoxic potential. Classification for genotoxicity is not warranted. |

| | |
|---------------------------|--|
| Carcinogenicity | Calcium (administered as Ca-lactate) is not carcinogenic (experimental result, rat). The pH effect of calcium dihydroxide does not give rise to a carcinogenic risk. Human epidemiological data support lack of any carcinogenic potential of calcium dihydroxide. Classification for carcinogenicity is not warranted. |
| Toxicity for reproduction | Calcium (administered as Ca-carbonate) is not toxic to reproduction (experimental result, mouse). The pH effect does not give rise to a reproductive risk. Human epidemiological data support lack of any potential for reproductive toxicity of calcium dihydroxide. Both in animal studies and human clinical studies on various calcium salts no reproductive or developmental effects whatsoever were detected. Also see the Scientific Committee on Food (Anonymous, 2006). Thus, calcium dihydroxide is not toxic for reproduction and/or development. Classification for reproductive toxicity according to regulation (EC) 1272/2008 is not required |

Medical conditions aggravated by exposure

Inhaling Dry Mix Mortar 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 as Dry Mix Mortar is an inorganic material. After hydration, cement lumps present no toxicity risks.

12.3. Bioaccumulative potential

Not relevant as Dry Mix Mortar is an inorganic material. After hydration, Dry Mix Mortar lumps present no toxicity risks.

12.4. Mobility in soil

Not relevant as Dry Mix Mortar is an inorganic material. After hydration, Dry Mix Mortar lumps present no toxicity risks.

12.5. Results of PBT and vPvB assessment

Not relevant as Dry Mix Mortar is an inorganic material. After hydration, Dry Mix Mortar lumps present no toxicity risks.

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 - Dry Mix Mortar 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.

EWC entry: 10 13 99 (wastes not otherwise specified)

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"

EWC entry: 10 13 06 (other particulates and dust)

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.

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

Dry Mix Mortar is not covered by the international regulation on the transport of dangerous goods (IMDG, IATA, ADR/RID); no classification is required.

No special precautions are needed apart from those mentioned under Section 8.

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

No special precautions are needed apart from those mentioned under Section 13.

14.6. Special precautions for user

No special precautions are needed apart from those mentioned under Section 8.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not relevant.

SECTION 15: Regulatory information

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

EU regulatory information

Dry mix mortar 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).

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.

15.2 Chemical Safety Assessment

Chemical safety assessment has not been carried out.

SECTION 16: Other information

16.1 Indication of changes

Revised: 21/6/2017

Revision: 5

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 construction materials |
|------|--|---|--|
| 2 | Use in closed, continuous process with occasional controlled exposure, eg industrial or professional manufacture of hydraulic binders | X | X |
| 3 | Use in closed batch process, eg industrial or professional manufacture of ready-mix concrete | X | X |
| 5 | Mixing or blending in batch process for formulation of mixtures and articles, eg industrial or professional manufacture of pre-cast concrete | X | X |
| 7 | Industrial spraying, eg 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, eg use of cement in bags to prepare mortar | | X |
| 8b | Transfer of substance or mixture from/to vessels/large containers a dedicated facilities, eg filling of silos, trucks or barges at cement plants | X | X |
| 9 | Transfer of substance or mixture into small containers, eg filling of cement bags in cement plants | X | X |
| 10 | Roller application or brushing, eg products to improve adherence between building surfaces and finishing products | | X |
| 11 | Non-Industrial spraying, eg professional use of wet suspensions of hydraulic binders by spraying | | X |
| 13 | Treatment of articles by dipping and pouring, eg covering of construction products with a layer to improve the performance of the product | | X |
| 14 | Production of mixtures or articles by tableting, compression extrusion, pelletisation, eg production of floor tiling | X | X |
| 19 | Hand-mixing with intimate contact and only PPE | | X |

| PROC | Identified Uses - Use Description | Manufacture/ Formulation of building and construction materials | Professional/ Industrial use of construction materials |
|------|--|---|--|
| | available, eg mixture of wet hydraulic binder on a construction site | | |

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 | | |
| FF P | Filtering facepiece against particles (disposable) | | |
| FM P | 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 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 | | |
| 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 | | |
| TRGS | 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 and sources of data

- (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) *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.*
- (3) *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).*

- (4) 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).
- (5) *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.
- (6) *Final report Sediment Phase Toxicity Test Results with Corophium volutator for Portland clinker prepared for Norcem A.S. by AnalyCen Ecotox AS*, 2007.
- (7) TNO report V8801/02, *An acute (4-hour) inhalation toxicity study with Portland Cement Clinker CLP/GHS 03-2010-fine in rats*, August 2010.
- (8) TNO report V8815/09, *Evaluation of eye irritation potential of cement clinker G in vitro using the isolated chicken eye test*, April 2010.
- (9) TNO report V8815/10, *Evaluation of eye irritation potential of cement clinker W in vitro using the isolated chicken eye test*, April 2010.
- (10) *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.
- (11) *Cytotoxicity and genotoxicity of cement dusts in A549 human epithelial lung cells in vitro*; Gminski et al, *Abstract DGPT conference Mainz*, 2008.
- (12) *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.
- (13) *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.
- (14) 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>.
- (15) CEMBUREAU - *The European Cement Association – Guidelines for the Safety Data Sheet template for common cements*
- (16) *PSDS for Ca(OH)₂ prepared in Accordance with Annex II of the REACH regulation EG 1907/2006, Regulation (EG) 1272/2008 and regulation (EU)453/2010 of Heidelberger Kalk version 2.0*
- (17) *PSDS for Ca(OH)₂ prepared in Accordance with Annex II of the REACH regulation EG 1907/2006, Regulation (EG) 1272/2008 and regulation (EU)453/2010 of CaO Hellas version 1.0*

16.5 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.

16.6 Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]

| Classification according to Regulation (EC) No. 1272/2008 | Classification procedure |
|---|--------------------------|
| Skin Irrit. 2, H315 | on basis of test data |
| Eye dam. 1, H318 | on basis of test data |
| Skin sens. 1B, H317 | Human experience |
| STOT SE. 3, H335 | Human experience |

16.7 Disclaimer

The information on this data sheet reflects the currently available knowledge and the currently state of the art and technology 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 sole responsibility of the user or distributor.

It is implicit that the user is responsible for determining appropriate safety measures and for applying the legislation covering his/her own activities.

This disclaimer shall be construed in accordance with and shall be governed by the laws of Greece. For any and all disputes, controversies and conflicts in connection with this Disclaimer, the Courts of Athens, Greece shall be exclusively competent.