

**White Cement according to EN 197-1**

Version number: GHS 1.0

Date of compilation: 2021-10-15

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier**

Trade name

**White Cement according to EN 197-1**

Unique formula identifier (Portland cement with one main constituent: clinker, type 1) UFI: E300-H0KU-S00G-GAKG

Unique formula identifier (Portland-slag cement and Blast furnace cement, type 2) UFI: D600-1098-200Y-5P5J

Unique formula identifier (Portland-limestone cement, type 7) UFI: WM00-J0R7-M00F-FD2V

**Registration number (REACH)**

not relevant (mixture)

**Product names**

- CEM I 52,5 R; White Portland cement EN 197-1 (type 1)
- CEM I 52,5 N; White Portland cement EN 197-1; CEM I 52,5 N WHITE (type 1)
- CEM II/A-LL 52,5 N; White Portland limestone cement EN 197-1 (type 7)
- CEM II/A-LL 42,5 R; White Portland limestone cement EN 197-1; CEM II/A-LL 42,5 R WHITE (type 7)
- CEM II/A-S 52,5 N; White Portland slag cement EN 197-1 (type 2)
- CEM II/A-S 42,5 R; White Portland slag cement EN 197-1 (type 2)
- CEM II/A-S 42,5 N; White Portland slag cement EN 197-1 (type 2)
- CEM II/B-S 42,5 R; White Portland slag cement EN 197-1 (type 2)
- CEM II/B-S 42,5 N; White Portland slag cement EN 197-1 (type 2).

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

Relevant identified uses

professional use

industrial use

consumer use (private households)

Cements are used in industrial installations to manufacture/formulate hydraulic binders for building and construction work, such as ready-mixed concrete, mortars, renders, grouts, plasters as well as precast concrete.

Common cements and cement containing mixtures (hydraulic binders) are used 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 a wet suspension (paste).

manufacture/formulation: PROC 2, PROC 3, PROC 5, PROC 8b, PROC 9, PROC 14, PROC 26

Professional/industrial use in building and construction materials: PROC 2, PROC 3, PROC 5, PROC 7, PROC 8a, PROC 8b, PROC 9, PROC 10, PROC 11, PROC 13, PROC 14, PROC 19, PROC 22, PROC 26

*for full text of abbreviations: see SECTION 16*

**1.3 Details of the supplier of the safety data sheet**

Danucem Slovensko a.s.

Rohožník

906 38 Rohožník

Slovakia

Telephone: 034/7765111

Place of production - factory: Rohožník

e-mail (competent person)

kontakt@danucem.com

**1.4 Emergency telephone number**

Emergency information service

National Poisons Information Service (NPIS)

In England and Wales: NHS 111 - dial 111

In Scotland: NHS 24 - dial 111

In N Ireland: Contact your local GP or pharmacist during normal hours

(www.gpoutofhours.hscni.net/) for GP services Outof-Hours.

In Republic of Ireland: 01 809 2166

**SECTION 2: Hazards identification**

**2.1 Classification of the substance or mixture**

Classification according to Regulation (EC) No 1272/2008 (CLP)

Section	Hazard class	Category	Hazard class and category	Hazard statement
3.2	skin corrosion/irritation	2	Skin Irrit. 2	H315
3.3	serious eye damage/eye irritation	1	Eye Dam. 1	H318
3.4S	skin sensitisation	1	Skin Sens. 1	H317
3.8R	specific target organ toxicity - single exposure (respiratory tract irritation)	3	STOT SE 3	H335

For full text of abbreviations: see SECTION 16.

**2.2 Label elements**

Labelling according to Regulation (EC) No 1272/2008 (CLP)

- Signal word danger

- Pictograms

GHS05, GHS07



- Hazard statements

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

- Precautionary statements

- P102 Keep out of reach of children.
- P261 Avoid breathing dust.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P302+P352 IF ON SKIN: Wash with plenty of water.
- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P310 Immediately call a POISON CENTER/doctor.
- P501 Dispose of contents/container in accordance with local/regional regulations.

- Hazardous ingredients for labelling Cement, portland, chemicals, Flue dust, portland cement

**2.3 Other hazards**

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.

Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

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### SECTION 3: Composition/information on ingredients

#### 3.1 Substances

Not relevant (mixture)

#### 3.2 Mixtures

Name of substance	Other names or synonyms	Identifier	Wt%	Hazard class and category	Hazard statement
Cement, portland, chemicals		CAS No 65997-15-1  EC No 266-043-4	4.6 – 100	3.2 Skin Irrit. 2 3.3 Eye Dam. 1 3.4S Skin Sens. 1 3.8R STOT SE 3	H315 H318 H317 H335
Slags, ferrous metal, blast furnace	oxo[(oxoalumanyl)oxy]aluminum; oxocalcium; oxoiron; oxomagnesium; silanedione Aluminium-Calcium-Magnesium-Silicium oxide equivalent	CAS No 65996-69-2  EC No 266-002-0  REACH Reg. No 01-2119487456-25-XXXX	≤ 95	the substance is not classified as dangerous	
limestone		CAS No 1317-65-3  EC No 215-279-6	5.5 – 35	the substance is not classified as dangerous	
Calcium sulfate	calcium sulfate	CAS No 7778-18-9  EC No 231-900-3  REACH Reg. No 01-2119444918-26-XXXX	≤ 8	the substance is not classified as dangerous	
Flue dust, portland cement	tricalcium dipotassium silanedione carbonate sulfate silicate	CAS No 68475-76-3  EC No 270-659-9  REACH Reg. No 01-2119486767-17-0066	≤ 5	3.2 Skin Irrit. 2 3.3 Eye Dam. 1 3.4S Skin Sens. 1 3.8R STOT SE 3	H315 H318 H317 H335

For full text of abbreviations: see SECTION 16.

### SECTION 4: First aid measures

#### 4.1 Description of first aid measures

##### General notes

Do not leave affected person unattended. Remove victim out of the danger area. Keep affected person warm, still and covered. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth.

##### Following inhalation

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. Remove person to fresh air and keep comfortable for breathing. Any dust in the throat and nasal passages should be cleared promptly. In case of respiratory tract irritation, consult a physician.

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### Following skin contact

Brush off loose particles from skin. Rinse skin with water/shower. Take off contaminated clothing and wash it before reuse. If skin irritation or rash occurs: Get medical advice/attention.

### Following eye contact

Do not rub eyes in order to avoid possible cornea damage as a result of mechanical stress. Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart. If possible, use isotonic water (0.9% NaCl). Avoid flushing particles into uninjured eye. If eye irritation persists: Get medical advice/attention.

### Following ingestion

Do NOT induce vomiting. Rinse mouth immediately and drink plenty of water. Do not serve anything by mouth to an unconscious person. 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).

Inhalation: Repeated inhalation of dust of Common cements over a long period of time increases the risk of developing lung diseases.

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

Treat symptomatically. Bring this safety data sheet or the label from this product.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

The product is not flammable. Extinguishing measures to suit surroundings.

#### Suitable extinguishing media

Water, Foam, Alcohol resistant foam, ABC-powder

#### Unsuitable extinguishing media

Water jet

### 5.2 Special hazards arising from the substance or mixture

Cement is not flammable.

#### Hazardous combustion products

Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>)

### 5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Co-ordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

## SECTION 6: Accidental release measures

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

#### For non-emergency personnel

Wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing. Follow the protective measures in Sections 7 and 8.

#### For emergency responders

Wear breathing apparatus if exposed to vapours/dust/spray/gases. Follow the protective measures in Sections 7 and 8.

### 6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it. Collect contaminated soil and dispose of it.

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### 6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Covering of drains, Take up mechanically

Advice on how to clean up a spill

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) 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.

Wet cement

Clean up wet cement and place in a container. Allow material to dry and solidify before disposal.

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

### 6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Recommendations

- Measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation. Take precautionary measures against static discharge. Use only in well-ventilated areas. Never add water to this product. Ground/bond container and receiving equipment.

- Handling of incompatible substances or mixtures

Do not mix with acids.

Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

### 7.2 Conditions for safe storage, including any incompatibilities

Bulk cement should be stored in silos that are waterproof, dry (i.e. with internal condensation minimised), clean and protected from contamination. Engulfment hazard: To prevent engulfment or suffocation, do not enter a confined space, such as a silo, bin, bulk truck, or other storage container or vessel that stores or contains cement without taking the proper security measures. Cement can build up or adhere to the walls of a confined space. The cement can release, collapse or fall unexpectedly. Packed products should be stored in unopened bags clear of the ground in cool, dry conditions and protected from excessive draught in order to avoid degradation of quality.

Bags should be stacked in a stable manner. Do not use aluminium containers for the storage or transport of wet cement containing mixtures due to incompatibility of the materials.

- Ventilation requirements

Use local and general ventilation.

### 7.3 Specific end use(s)

See section 1.2.

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### SECTION 8: Exposure controls/personal protection

#### 8.1 Control parameters

##### National limit values

Occupational exposure limit values (Workplace Exposure Limits)

Country	Name of substance	CAS No	Identifier	TWA [ppm]	TWA [mg/m <sup>3</sup> ]	STEL [ppm]	STEL [mg/m <sup>3</sup> ]	Notation	Source
IE	Flue dust, portland cement		OELV		10			i	S.I. No. 619 of 2001
IE	Flue dust, portland cement		OELV		4			r	S.I. No. 619 of 2001
IE	limestone	1317-65-3	OELV		10			i	S.I. No. 619 of 2001
IE	limestone	1317-65-3	OELV		4			r	S.I. No. 619 of 2001
IE	Cement, portland, chemicals	65997-15-1	OELV		1			r	S.I. No. 619 of 2001
IE	Calcium sulfate	7778-18-9	OELV		10				S.I. No. 619 of 2001

##### Notation

i	inhalable fraction
r	respirable fraction
STEL	short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)
TWA	time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified)

##### Relevant DNELs of components of the mixture

Name of substance	CAS No	Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
Calcium sulfate	7778-18-9	DNEL	21.17 mg/m <sup>3</sup>	human, inhalatory	worker (industry)	chronic - systemic effects
Calcium sulfate	7778-18-9	DNEL	5,082 mg/m <sup>3</sup>	human, inhalatory	worker (industry)	acute - systemic effects
Calcium sulfate	7778-18-9	DNEL	5.29 mg/m <sup>3</sup>	human, inhalatory	consumer (private households)	chronic - systemic effects
Calcium sulfate	7778-18-9	DNEL	3,811 mg/m <sup>3</sup>	human, inhalatory	consumer (private households)	acute - systemic effects
Calcium sulfate	7778-18-9	DNEL	1.52 mg/kg bw/day	human, oral	consumer (private households)	chronic - systemic effects
Calcium sulfate	7778-18-9	DNEL	11.4 mg/kg bw/day	human, oral	consumer (private households)	acute - systemic effects
Flue dust, portland cement	68475-76-3	DNEL	0.84 mg/m <sup>3</sup>	human, inhalatory	worker (industry)	chronic - local effects
Flue dust, portland cement	68475-76-3	DNEL	4 mg/m <sup>3</sup>	human, inhalatory	worker (industry)	acute - local effects

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Name of substance	CAS No	Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
Flue dust, portland cement	68475-76-3	DNEL	0.84 mg/m <sup>3</sup>	human, inhalatory	consumer (private households)	chronic - local effects

### Relevant PNECs of components of the mixture

Name of substance	CAS No	Endpoint	Threshold level	Organism	Environmental compartment	Exposure time
Slags, ferrous metal, blast furnace	65996-69-2	PNEC	5 g/l	aquatic organisms	freshwater	short-term (single instance)
Slags, ferrous metal, blast furnace	65996-69-2	PNEC	0.5 g/l	aquatic organisms	marine water	short-term (single instance)
Slags, ferrous metal, blast furnace	65996-69-2	PNEC	10 g/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Slags, ferrous metal, blast furnace	65996-69-2	PNEC	1,000 mg/kg	terrestrial organisms	soil	short-term (single instance)
Calcium sulfate	7778-18-9	PNEC	100 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Flue dust, portland cement	68475-76-3	PNEC	282 µg/l	aquatic organisms	freshwater	short-term (single instance)
Flue dust, portland cement	68475-76-3	PNEC	28 µg/l	aquatic organisms	marine water	short-term (single instance)
Flue dust, portland cement	68475-76-3	PNEC	6 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Flue dust, portland cement	68475-76-3	PNEC	875 µg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
Flue dust, portland cement	68475-76-3	PNEC	88 µg/kg	aquatic organisms	marine sediment	short-term (single instance)
Flue dust, portland cement	68475-76-3	PNEC	5 mg/kg	terrestrial organisms	soil	short-term (single instance)

## 8.2 Exposure controls

Specification for technical measures (local exhaust ventilation / ventilation) and respiratory PPE depending on the type of exposure is given in Annex 1 to this SDS.

### Appropriate engineering controls

Provide good ventilation and local exhaust in the area with increased concentration. Avoid dust formation.

### Individual protection measures (personal protective equipment)

Use personal protective equipment with CE marking. 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 using this product. Create and observe skin protection plan! Before breaks and after working, workers should wash hands and, if possible, take a shower. Wash contaminated clothing before reuse.

### Eye/face protection

During work use protective face shield or protective goggles (EN 166).

### Skin protection

#### - Hand protection

Use protective gloves according to EN 374. Protective gloves should be replaced immediately if damaged or in case of signs of wear. 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 cement.

Particular care should be taken to ensure that wet cement does not enter the boots. In some circumstances, such as when laying concrete or screed, waterproof trousers or kneepads are necessary.

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### - Other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling.

### Respiratory protection

In case of inadequate ventilation wear respiratory protection. Particulate filter device (EN 143). Not required under normal conditions of use.

### Thermal hazards

Not relevant.

### Environmental exposure controls

Environmental exposure control is relevant for the aquatic environment as emissions of clinker dust in the different life-cycle stages (production and use) mainly apply to ground and waste water. The aquatic effect and risk assessment cover the effect on organisms/ecosystems due to possible pH changes related to hydroxide discharges. The toxicity of other dissolved inorganic ions is expected to be negligible compared to the potential pH effect.

Any effects that might occur during production and use would be expected to take place on a local scale. The pH of effluent and surface water should not exceed 9. Otherwise it could have an impact on municipal sewage treatment plants (STPs) and industrial waste water treatment plants (WWTPs). For that assessment of the exposure, a stepwise approach is recommended:

Tier 1: Retrieve information on effluent pH and the contribution of the clinker dust on the resulting pH. Should the pH be above 9 and be predominantly attributable to clinker dust, then further actions are required to demonstrate safe use.

Tier 2: Retrieve information on receiving water pH after the discharge point. The pH of the receiving water shall not exceed the value of 9.

Tier 3: Measure the pH in the receiving water after the discharge point. If pH is below 9, safe use is reasonably demonstrated. If pH is found to be above 9, risk management measures have to be implemented: the effluent has to undergo neutralisation, thus ensuring safe use of clinker during production or use phase.

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

Physical state	solid, (powder)
Colour	white - grey
Odour	odourless
Melting point/freezing point	>1,250 °C
Boiling point or initial boiling point and boiling range	not determined
Flammability	not determined
Lower and upper explosion limit	not determined
Flash point	not determined
Auto-ignition temperature	not determined
Decomposition temperature	not relevant
pH (value)	11 – 13.5 (T = 20°C in water, water-solid ratio 1:2)
Kinematic viscosity	not relevant

### Solubility(ies)

Water solubility	0.1 – 1.5 g/l
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Partition coefficient n-octanol/water (log value)	this information is not available
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Vapour pressure	not determined
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### Density and/or relative density

Density	0.9 – 1.5 g/cm <sup>3</sup>
Relative density	2.75 – 3.2 at 20 °C (water = 1)
Relative vapour density	this information is not available

### Particle characteristics

Particle size	5 – 30 µm
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## 9.2 Other information

Information with regard to physical hazard classes	hazard classes acc. to GHS (physical hazards): not relevant
Other safety characteristics	there is no additional information

## 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 environment.

### 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

No known 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

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous combustion products: see section 5.

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### SECTION 11: Toxicological information

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

Test data are not available for the complete mixture.  
 Literary sources: see section 16.

##### Classification procedure

The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

##### Classification according to GHS (1272/2008/EC, CLP)

##### Acute toxicity

Not classified as a mixture with acute toxicity.  
 Dermal  
 Limit test, rabbit, 24 hours contact, 2,000 mg/kg body weight – no lethality (2).  
 Inhalation  
 No acute toxicity by inhalation observed (9).

##### - Acute toxicity of components of the mixture

Name of substance	CAS No	Exposure route	Endpoint	Value	Species
Slags, ferrous metal, blast furnace	65996-69-2	oral	LD50	>2,000 mg/kg	rat
Slags, ferrous metal, blast furnace	65996-69-2	inhalation: dust/ mist	LC50	>5,235 mg/m <sup>3</sup> /4h	rat
Slags, ferrous metal, blast furnace	65996-69-2	dermal	LD50	>4,000 mg/kg	rat
Flue dust, portland cement	68475-76-3	oral	LD50	>1,848 mg/kg	rat
Flue dust, portland cement	68475-76-3	dermal	LD50	≥2,000 mg/kg	rat

##### Skin corrosion/irritation

Causes skin irritation.  
 Mixture 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).

##### Serious eye damage/eye irritation

Causes serious eye damage.  
 Portland cement clinker caused a mixed picture of corneal effects and the calculated irritation index was 128. 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).

##### Respiratory or skin sensitisation

May cause an allergic skin reaction.  
 Skin sensitisation  
 Some individuals may develop eczema upon exposure to wet cement dust, caused 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 (3, 4, 17).  
 Respiratory sensitisation  
 There is no indication of sensitisation of the respiratory system (1).

##### Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.  
 No indication (12, 13).

##### Carcinogenicity

Shall not be classified as carcinogenic.  
 No causal association has been established between 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) (1, 14).

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### Reproductive toxicity

Shall not be classified as a reproductive toxicant.

### Specific target organ toxicity - single exposure

May cause respiratory irritation.

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).

### Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (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 (15).

### Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

### Symptoms related to the physical, chemical and toxicological characteristics

#### If aspirated:

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.

## 11.2 Information on other hazards

There is no additional information.

## SECTION 12: Ecological information

### 12.1 Toxicity

Shall not be classified as hazardous to the aquatic environment.

Ecotoxicological tests with Portland cement on *Daphnia magna* (5) and *Selenastrum coli* (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.

Literary sources: see section 16.

#### Aquatic toxicity (acute) of components of the mixture

Name of substance	CAS No	Endpoint	Value	Species	Exposure time
Slags, ferrous metal, blast furnace	65996-69-2	LC50	>100 g/l	fish	96 h
Slags, ferrous metal, blast furnace	65996-69-2	EC50	>100 g/l	aquatic invertebrates	48 h
Slags, ferrous metal, blast furnace	65996-69-2	NOEC	≥25 g/l	aquatic invertebrates	24 h
Flue dust, portland cement	68475-76-3	ErC50	22.4 mg/l	algae	72 h
Flue dust, portland cement	68475-76-3	NOEC	11.1 mg/l	fish	96 h

#### Aquatic toxicity (chronic) of components of the mixture

Name of substance	CAS No	Endpoint	Value	Species	Exposure time
Slags, ferrous metal, blast furnace	65996-69-2	EC50	>10,000 mg/l	microorganisms	3 h
Slags, ferrous metal, blast furnace	65996-69-2	NOEC	≥50 g/l	aquatic invertebrates	48 d

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Name of substance	CAS No	Endpoint	Value	Species	Exposure time
Slags, ferrous metal, blast furnace	65996-69-2	LOEC	5 g/l	aquatic invertebrates	7 d
Slags, ferrous metal, blast furnace	65996-69-2	growth (EbCx) 10%	5,000 mg/l	aquatic invertebrates	21 d
Calcium sulfate	7778-18-9	EC50	>1,000 mg/l	microorganisms	3 h
Calcium sulfate	7778-18-9	NOEC	1,000 mg/l	microorganisms	3 h
Flue dust, portland cement	68475-76-3	EC50	743 mg/l	microorganisms	3 h

### Biodegradation

Not applicable - contains inorganic substances.

### 12.2 Persistence and degradability

Not relevant as cement is an inorganic material.

### 12.3 Bioaccumulative potential

It is not expected that the mixture or its components are capable of bioaccumulation.

### 12.4 Mobility in soil

Not relevant as cement is an inorganic material.

### 12.5 Results of PBT and vPvB assessment

This mixture does not contain substances assessed to be vPvB / PBT according to Regulation (EC) No 1907/2006, Annex XIII.

### 12.6 Endocrine disrupting properties

None of the ingredients are listed.

### 12.7 Other adverse effects

Harmful effects to aquatic organisms due to pH-shift.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

Dispose of contents/container to a facility in accordance with local and national regulations. Waste should be recovered or disposed of in authorized incineration plants or waste facilities in accordance with applicable regulations.

#### Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets.

#### Waste treatment of containers/packagings

Product - cement that has exceeded its shelf life (and when demonstrated that it contains more than 0.0002% soluble Cr (VI)): shall not be used/sold other than for use in controlled closed and totally automated processes or should be recycled or disposed of according to local legislation or treated again with a reducing agent.

Product - unused residue or dry spillage

Pick up dry unused residue or dry spillage as is. Mark the containers. Possibly reuse depending upon shelf life considerations and the requirement to avoid dust exposure. In case of disposal, harden with water and dispose according to "Product - after addition of water, hardened"

Product - slurries

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

Product - after addition of water, hardened

Dispose of according to the local legislation. Avoid entry into the sewage water system. Dispose of the hardened product as concrete waste. Due to the inertisation, concrete waste is not a dangerous waste.

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**Relevant provisions relating to waste**

Waste code (EU)

product  
10 13 14 waste concrete and concrete sludge  
17 01 01 concrete  
packagings  
15 01 01 paper and cardboard packaging

**Remarks**

Please consider the relevant national or regional provisions. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

**SECTION 14: Transport information**

- |                                                                     |                                                                       |
|---------------------------------------------------------------------|-----------------------------------------------------------------------|
| <b>14.1 UN number or ID number</b>                                  | not subject to transport regulations                                  |
| <b>14.2 UN proper shipping name</b>                                 | not relevant                                                          |
| <b>14.3 Transport hazard class(es)</b>                              | none                                                                  |
| <b>14.4 Packing group</b>                                           | not assigned                                                          |
| <b>14.5 Environmental hazards</b>                                   | non-environmentally hazardous acc. to the dangerous goods regulations |
| <b>14.6 Special precautions for user</b>                            | There is no additional information.                                   |
| <b>14.7 Maritime transport in bulk according to IMO instruments</b> | The cargo is not intended to be carried in bulk.                      |

**Information for each of the UN Model Regulations****Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN) - Additional information**

Not subject to ADR, RID and ADN.

**International Maritime Dangerous Goods Code (IMDG) - Additional information**

Not subject to IMDG.

**International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information**

Not subject to ICAO-IATA.

**SECTION 15: Regulatory information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**  
**Relevant provisions of the European Union (EU)**

Regulation of the European Parliament and of the Council (EC) No. 1907/2006 (REACH) as amended,  
Regulation of the European Parliament and of the Council (EC) No. 1272/2008 (CLP) as amended.

**Restrictions according to REACH, Annex XVII:**

the product and listed ingredients are subject to the following restrictions, according to REACH Annex XVII. None of these restrictions are applicable for the identified use of the product

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Dangerous substances with restrictions (REACH, Annex XVII)			
Name of substance	Name acc. to inventory	Restriction	No
Cement, portland, chemicals	chromium(VI) compounds	R47	47
Cement, portland, chemicals	this product meets the criteria for classification in accordance with Regulation No 1272/2008/EC	R3	3
Flue dust, portland cement	chromium(VI) compounds	R47	47

### Legend

**R3**

- Shall not be used in:
  - ornamental articles intended to produce light or colour effects by means of different phases, for example in ornamental lamps and ash-trays,
  - tricks and jokes,
  - games for one or more participants, or any article intended to be used as such, even with ornamental aspects,
- Articles not complying with paragraph 1 shall not be placed on the market.
- Shall not be placed on the market if they contain a colouring agent, unless required for fiscal reasons, or perfume, or both, if they:
  - can be used as fuel in decorative oil lamps for supply to the general public, and,
  - present an aspiration hazard and are labelled with R65 or H304,
- Decorative oil lamps for supply to the general public shall not be placed on the market unless they conform to the European Standard on Decorative oil lamps (EN 14059) adopted by the European Committee for Standardisation (CEN).
- Without prejudice to the implementation of other Community provisions relating to the classification, packaging and labelling of dangerous substances and mixtures, suppliers shall ensure, before the placing on the market, that the following requirements are met:
  - lamp oils, labelled with R65 or H304, intended for supply to the general public are visibly, legibly and indelibly marked as follows: 'Keep lamps filled with this liquid out of the reach of children'; and, by 1 December 2010, 'Just a sip of lamp oil - or even sucking the wick of lamps - may lead to life-threatening lung damage';
  - grill lighter fluids, labelled with R65 or H304, intended for supply to the general public are legibly and indelibly marked by 1 December 2010 as follows: 'Just a sip of grill lighter may lead to life threatening lung damage';
  - lamp oils and grill lighters, labelled with R65 or H304, intended for supply to the general public are packaged in black opaque containers not exceeding 1 litre by 1 December 2010.
- No later than 1 June 2014, the Commission shall request the European Chemicals Agency to prepare a dossier, in accordance with Article 69 of the present Regulation with a view to ban, if appropriate, grill lighter fluids and fuel for decorative lamps, labelled R65 or H304, intended for supply to the general public.
- Natural or legal persons placing on the market for the first time lamp oils and grill lighter fluids, labelled with R65 or H304, shall by 1 December 2011, and annually thereafter, provide data on alternatives to lamp oils and grill lighter fluids labelled R65 or H304 to the competent authority in the Member State concerned. Member States shall make those data available to the Commission.

**R47**

- 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.
- If reducing agents are used, then without prejudice to the application of other Community provisions on the classification, packaging and labelling of substances and mixtures, suppliers shall ensure before the placing on the market that the packaging of cement or cement-containing mixtures is visibly, legibly and indelibly marked with information on the packing date, as well as on the storage conditions and the storage period appropriate to maintaining the activity of the reducing agent and to keeping the content of soluble chromium VI below the limit indicated in paragraph 1.
- By way of derogation, paragraphs 1 and 2 shall not apply to the placing on the market for, and use in, controlled closed and totally automated processes in which cement and cement-containing mixtures are handled solely by machines and in which there is no possibility of contact with the skin.
- The standard adopted by the European Committee for Standardization (CEN) for testing the water-soluble chromium (VI) content of cement and cement-containing mixtures shall be used as the test method for demonstrating conformity with paragraph 1.
- Leather articles coming into contact with the skin shall not be placed on the market where they contain chromium VI in concentrations equal to or greater than 3 mg/kg (0,0003 % by weight) of the total dry weight of the leather.
- Articles containing leather parts coming into contact with the skin shall not be placed on the market where any of those leather parts contains chromium VI in concentrations equal to or greater than 3 mg/kg (0,0003 % by weight) of the total dry weight of that leather part.
- Paragraphs 5 and 6 shall not apply to the placing on the market of second-hand articles which were in end-use in the Union before 1 May 2015.

### List of substances subject to authorisation (REACH, Annex XIV) / SVHC - candidate list

none of the ingredients are listed

### Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

none of the ingredients are listed

### Regulation concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

none of the ingredients are listed

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### Water Framework Directive (WFD)

Name of substance	Listed in
Calcium sulfate	A)

#### Legend

A) Indicative list of the main pollutants

### Regulation on persistent organic pollutants (POP)

None of the ingredients are listed.

### National inventories

Country	Inventory	Status
EU	REACH Reg.	not all ingredients are listed

#### Legend

REACH Reg. REACH registered substances

## 15.2 Chemical Safety Assessment

A chemical safety assessment has been performed for substances with a REACH registration number.

## SECTION 16: Other information

### Abbreviations and acronyms

PROC1. Use in closed, continuous process with occasional controlled exposure.

PROC3. Use in closed batch process (synthesis or formulation).

PROC5. Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact).

PROC7. Industrial spraying.

PROC8a. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities.

PROC8b. Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.

PROC9. Transfer of substance or preparation into small containers (dedicated filling line, including weighing).

PROC10. Roller application or brushing.

PROC11. Non industrial spraying.

PROC13. Treatment of articles by dipping and pouring.

PROC14. Production of preparations or articles by tableting, compression, extrusion, pelletisation.

PROC19. Hand-mixing with intimate contact and only PPE available.

PROC22. Potentially closed processing operations with minerals/metals at elevated temperature; industrial setting.

PROC26. Handling of solid inorganic substances at ambient temperature.

Abbr.	Descriptions of used abbreviations
ADN	Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)
ADR	Accord relatif au transport international des marchandises dangereuses par route (Agreement concerning the International Carriage of Dangerous Goods by Road)
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
DGR	Dangerous Goods Regulations (see IATA/DGR)
DNEL	Derived No-Effect Level
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
EC No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union)
EINECS	European Inventory of Existing Commercial Chemical Substances

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Abbr.	Descriptions of used abbreviations
ELINCS	European List of Notified Chemical Substances
ErC50	≡ EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control
Eye Dam.	seriously damaging to the eye
Eye Irrit.	irritant to the eye
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
index No	the Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008
LC50	Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval
LD50	Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during a specified time interval
LOEC	Lowest Observed Effect Concentration
NLP	No-Longer Polymer
NOEC	No Observed Effect Concentration
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
PPE	personal protective equipment
ppm	parts per million
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
S.I. No. 619 of 2001	Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001
Skin Corr.	corrosive to skin
Skin Irrit.	irritant to skin
Skin Sens.	skin sensitisation
STEL	short-term exposure limit
STOT SE	specific target organ toxicity - single exposure
SVHC	Substance of Very High Concern
TWA	time-weighted average
vPvB	very Persistent and very Bioaccumulative



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### Key literature references and sources for 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) 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](http://ec.europa.eu/health/archive/ph_risk/committees/sct/documents/out158_en.pdf).
- (4) Epidemiological assessment of the occurrence of allergic dermatitis in workers in the construction industry related to the content of Cr (VI) in cement, NIOH, Page 11, 2003.
- (5) U.S. EPA, Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 3rd ed. EPA/600/7-91/002, Environmental Monitoring and Support Laboratory, U.S. EPA, Cincinnati, OH (1994a) and 4th ed. EPA-821-R-02-013, US EPA, office of water, Washington D.C. (2002).
- (6) U.S. EPA, Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, 4th ed. EPA/600/4-90/027F, Environmental Monitoring and Support Laboratory, U.S. EPA, Cincinnati, OH (1993) and 5th ed. EPA-821-R-02-012, US EPA, office of water, Washington D.C. (2002).
- (7) Environmental Impact of Construction and Repair Materials on Surface and Ground Waters. Summary of Methodology, Laboratory Results, and Model Development. NCHRP report 448, National Academy Press, Washington, D.C., 2001.
- (8) Final report Sediment Phase Toxicity Test Results with Corophium volutator for Portland clinker prepared for Norcem A.S. by AnalyCen Ecotox AS, 2007.
- (9) TNO report V8801/02, An acute (4-hour) inhalation toxicity study with Portland Cement Clinker CLP/GHS 03-2010-fine in rats, August 2010.
- (10) TNO report V8815/09, Evaluation of eye irritation potential of cement clinker G in vitro using the isolated chicken eye test, April 2010.
- (11) TNO report V8815/10, Evaluation of eye irritation potential of cement clinker W in vitro using the isolated chicken eye test, April 2010.
- (12) Investigation of the cytotoxic and proinflammatory effects of cement dusts in rat alveolar macrophages, Van Berlo et al, *Chem. Res. Toxicol.*, 2009 Sept; 22(9):1548-58.
- (13) Cytotoxicity and genotoxicity of cement dusts in A549 human epithelial lung cells in vitro; Gminski et al, Abstract DGPT conference Mainz, 2008.
- (14) Comments on a recommendation from the American Conference of governmental industrial Hygienists to change the threshold limit value for Portland cement, Patrick A. Hessel and John F. Gamble, EpiLung Consulting, June 2008.
- (15) Exposure to Thoracic Aerosol in a Prospective Lung Function Study of Cement Production Workers; Noto, H., et al; *Ann. Occup. Hyg.*, 2015, Vol. 59, No. 1, 4-24.
- (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.

Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures.

Regulation (EC) No. 1907/2006 (REACH), amended by 2020/878/EU.

Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

### Classification procedure

Physical and chemical properties: The classification is based on tested mixture.

Health hazards: Skin Irrit. 2, H315 a Eye dam. 1, H318 na základe údajov z testov; Skin sens. 1B, H317 a STOT SE. 3, H335 na základe skúseností u ľudí.

Environmental hazards: The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

### List of relevant phrases (code and full text as stated in chapter 2 and 3)

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

### Training advice

Training recommendations: Workers must be aware of handling risks and health and environmental protection requirements.

### Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.

**Annex 1 to the safety data sheet: supplement to section 8.2 - specification for technical measures and respiratory PPE depending on the type of exposure**

For each type of exposure, the user must choose from option A or B (if available), but always the same option for the technical measure and the PPE. Only combinations between A) – A) and B) – B) are possible.

Exposure scenario	PROC* (see section 16)	Exposure	Localised controls	Efficiency	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	-	not required	-
	14, 26		A: not required	-	A: P1 mask (FF, FM)	APF = 4
			B: generic local exhaust ventilation	78%	B: not required	-
	5, 8b, 9		A: general ventilation	17%	A: P2 mask (FF, FM)	APF = 10
B: generic local exhaust ventilation			78%	B: P1 mask (FF, FM)	APF = 4	
Industrial uses of dry hydraulic building and construction materials (indoor, outdoor)	2		not required	-	not required	-
	14, 22, 26		A: not required	-	A: P1 mask (FF, FM)	APF = 4
			B: generic local exhaust ventilation	78%	B: not required	-
	5, 8b, 9		A: general ventilation	17%	A: P2 mask (FF, FM)	APF = 10
B: generic local exhaust ventilation			78%	B: P1 mask (FF, FM)	APF = 4	
Industrial uses of wet suspension of hydraulic building and construction materials	7		A: not required	-	A: P1 mask (FF, FM)	APF = 4
	2, 5, 8b, 9, 10, 13, 14		B: generic local exhaust ventilation	78%	B: not required	-
			not required	-	not required	-
Professional use of dry hydraulic building and construction material (indoor, outdoor)	2		not required	-	P1 mask (FF, FM)	APF = 4
	9, 26		A: not required	-	A: P2 mask (FF, FM)	APF = 10
			B: generic local exhaust ventilation	72%	B: P1 mask (FF, FM)	APF = 4
	5, 8a, 8b, 14	A: not required	-	A: P3 mask (FF, FM)	APF = 20	
		B: integrated local exhaust ventilation	87%	B: P1 mask (FF, FM)	APF = 4	
	19	localised controls are not applicable, process only in good ventilated rooms or outdoor	50%	P2 mask (FF, FM)	APF = 10	
Professional uses of wet suspensions of hydraulic building and construction materials	11	A: not required	-	A: P2 mask (FF, FM) a	APF = 10	
	2, 5, 8a, 8b, 9, 10, 13, 14, 19	B: generic local exhaust ventilation	72%	B: P1 mask (FF, FM)	APF = 4	
		not required	-	not required	-	