

**Cement, Masonry Cement, Hydraulic road binders, Hydraulic Lime (low-chromate)**

Products: Portland Cement, Portland Composite Cement, Portland Slag Cement, Blast Furnace Cement, Masonry Cement, Hydraulic Road Binders in accordance with DIN EN 13282-1, Hydraulic Lime

Version 4.3 13.12.2017

Replaces all previous versions

Print date: 13.12.2017

**1. Identification of the mixture and of the company**

**1.1 Product identifier**

Trade name

CEM I 42,5 N	Portland cement
CEM I 42,5 R	
CEM I 52,5 N	
CEM II/A-LL 42,5 N	Portland composite cement
CEM II/B-S 42,5 N	Portland slag cement
CEM III/A 42,5 N; CEM III/A 42,5 N (na)	Blast furnace cement
CEM III/A 42,5 N-LH; CEM III/A 42,5 N-LH (na)	
HRB E 4	Hydraulic road binders
MC 5	Masonry cement
MC 12,5	
HL 5	Hydraulic lime DIN EN 459

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

Cements go directly into final applications or are used in industrial installations to manufacture/formulate hydraulic binding agents such as ready-mixed concrete, dry mortar, plasters, etc.

In the final application, cements and hydraulic binding agents made from them are used for the manufacturing of building materials and structural components both by industrial and professional users (professionals in the building sector) and by private end consumers. For this purpose, cements and cement-containing hydraulic binding agents are mixed with water, homogenized and manufactured into the desired building material and component. Related activities include the handling of dry materials (powder) and of materials mixed with water (suspension).

*A list of applications for the professional user with a statement of process categories and descriptors according to ECHA Guidance R.12 (ECHA-2010-G-05) is contained in Section 16.*

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

Seibel & Söhne GmbH & Co. KG

Berger Straße 100

D-59597 Erwitte

Phone: +49 (2943) 9732-0

Fax: +49 (2943) 9732-29

E-Mail address of the person responsible for the SDS: [info@seibel-soehne.de](mailto:info@seibel-soehne.de)

Information provided by: Laboratory, Tel.: +49 (2943) 9732-0

**Cement, Masonry Cement, Hydraulic road binders, Hydraulic Lime (low-chromate)**

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Version 4.3 13.12.2017

Replaces all previous versions

Print date: 13.12.2017

## 1.4. Emergency telephone number

Emergency information: Poison Control Center in Mainz – Tel.: +49 (6131) 19240  
(7 days/24 hours, in German and English)

### United Kingdom

Official advisory body: No  
Name: NHS Direct ( England & Wales )  
Emergency number: +44 845 4647  
Hours of operation: 24/7  
Available for: Public  
Languages: English ( interpreter service available )  
Website: <http://www.nhsdirect.nhs.uk/>  
Contact: +44 20 7599 4200

Official advisory body: No  
Name: NHS Direct ( Scotland )  
Emergency number: +44 845 242424  
Hours of operation: 24/7  
Available for: Public  
Languages: English  
Website: <http://www.nhs24.com/>  
Contact: +44 20 7599 4200  
enquiries@nhs24.scot.nhs.uk

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## SECTION 2. Hazards identification

### 2.1. Classification of the substance or mixture

#### 2.1.1 Classification according to Regulation (EC) No. 1272/2008 [CLP]

Skin irritation 2, H315  
Serious eye damage 1, H318  
Specific target organ toxicity single exposure 3, H335

#### 2.1.2 Other statements

Full wording of the R-phrases, hazard statements and EC hazard statements in SECTION 16.

When cement reacts with water and becomes wet, a strong alkaline solution is produced. Due to the high alkalinity, wet cement may provoke skin and eye irritation.

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Version 4.3 13.12.2017

Replaces all previous versions

Print date: 13.12.2017

**2.2. Label elements**

**Labelling according to Regulation (EC) No. 1272/2008**

Hazard pictograms:		
Signal word:	Danger	
Hazard statements:	H315	Causes skin irritation.
	H318	Causes serious eye damage.
	H335	May cause respiratory irritation.
Precautionary statements:	P280	Wear protective gloves/protective clothing/eye protection/face protection.
	P305+P351+P338+P310	IF IN EYES: Rinse cautiously with water for several minutes. Immediately call a POISON CENTRE or doctor/physician.
	P302+P352+P333+P313	IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention
	P261+P304+P340+P312	Avoid breathing dust. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTRE or doctor/physician if you feel unwell.
	<i>If the product is offered or sold to the general public, additionally:</i>	
	P102	Keep out of reach of children.
	P501	Dispose of contents/container to suitable waste collection sites
Supplementary information	If stored properly in a dry place remains low-chromate for at least 6 months from date of production.	

**2.3. Other hazards**

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

The product contains chromate reducers, keeping the content of water-soluble chromium(VI) below 0.0002%. However, as a result of inappropriate storage (ingress of moisture) or expiration, the contained chromate reducers can lose their effectiveness, and a sensitizing effect of cement upon skin contact cannot be excluded (R43 and H317 or EUH203).

**SECTION 3: Composition/information on ingredients**

**3.1. Substances**

Not applicable, because the product is a mixture.

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Version 4.3 13.12.2017

Replaces all previous versions

Print date: 13.12.2017

**3.2. Mixtures**

Standard cement, hydraulic road binder and hydraulic lime according to DIN EN 197-1, DIN EN 197-4, DIN EN 13282-1, DIN EN 459-1 or where applicable according to approval notification by Deutsches Institut für Bautechnik.

Substance	Concentration range [wt.-%]	EC number	CAS number	Registration number (REACH)	Classification according to European Regulation (EC) No 1272/2008 (CLP)	
Portland cement clinker (a)	5 - 100	266-043-4	65997-15-1	(a)	Skin irritation. 2 Allerg. skin 1B Eye damage. 1 STOT single 3	H315 H317 H318 H335
Flue dust (b)	0.1 - 5	270-659-9	68475-76-3	01-2119486767-17-xxxx	Skin irritation. 2 Allerg. skin 1B Eye damage. 1 STOT single 3	H315 H317 H318 H335

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

(b) Flue dust is a substance (UVCB) which occurs in cement clinker production; other common names are cement kiln dust, bypass dust, bypass meal, filter dust, electrostatic gas scrubbing dust and clinker dust

**SECTION 4: First aid measures**

**4.1. Description of first aid measures**

**General notes**

No special personal protective equipment is required for first aiders. First aiders should however avoid contact with wet cement.

**Following contact with eyes**

Do not rub eyes dry because mechanical stress may cause additional damage to the cornea. Where applicable, remove contact lenses and immediately rinse the eye while open under running water for at least 20 minutes in order to remove all particles. If possible, use isotonic eye-cleansing solution (0.9% NaCl). Always consult an occupational physician or ophthalmologist.

**Following skin contact**

Remove dry cement and rinse abundantly with water. Rinse wet cement with plenty of water. Remove contaminated clothing, footwear, watches, etc. and clean these thoroughly before re-using them. Seek medical treatment in all cases of irritation or burns.

**Following inhalation**

Seek fresh air. Dust should quickly be removed from throat and nose. Consult a physician should symptoms such as discomfort, coughing or persistent irritation occur.

**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 poison control centre.

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Products: Portland Cement, Portland Composite Cement, Portland Slag Cement, Blast Furnace Cement, Masonry Cement, Hydraulic Road Binders in accordance with DIN EN 13282-1, Hydraulic Lime

Version 4.3 13.12.2017

Replaces all previous versions

Print date: 13.12.2017

**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 eye damage.

**Skin:** Sustained contact with cement may cause irritation on damp skin (due to sweating or humidity). Contact between cement and damp skin may cause skin irritation, dermatitis or severe skin damage. For more details see reference (1).

**Inhalation:** Repeated inhalation of large amounts of cement dust over a long period of time increases the risk of developing lung diseases.

**Environment:** Under normal use, cement is not hazardous to the environment.

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

When contacting a physician, take this SDS with you.

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**SECTION 5: Fire-fighting measures**

**5.1. Extinguishing media**

Cements are not flammable.

**5.2. Special hazards arising from the substance or mixture**

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

**5.3. Advice for fire-fighters**

No special measures are required, as cement does not pose any fire-related hazards.

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**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 exposure.

**6.2. Environmental precautions**

Cement must not be allowed to penetrate the sewage water system, surface water or groundwater.

**6.3. Methods and material for containment and cleaning up**

Collect up spilled cement and reuse if possible.

**Cement, Masonry Cement, Hydraulic road binders, Hydraulic Lime (low-chromate)**

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Version 4.3 13.12.2017

Replaces all previous versions

Print date: 13.12.2017

Where possible, use dry methods to clean, such as vacuum exhaust (portable devices with highly efficient filter systems (EPA and HEPA filters, EN 1822-1:2009) or equivalent techniques), which do not generate dust formation. Never use compressed air for cleaning.

If dust is formed when applying a dry cleaning method, personal protective equipment must be used. Avoid inhalation of cement dust and skin contact. Place spilled material back into a container for potential subsequent use.

**6.4. Reference to other sections**

See sections 8 and 13 for more details.

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**SECTION 7: Handling and storage**

**7.1. Precautions for safe handling**

**7.1.1 Protective measures**

Follow the recommendations as given in Section 8.  
To clean up dry cement, see Subsection 6.3.

***Measures to prevent fire***

Not applicable.

***Measures to prevent aerosol and dust generation***

Do not sweep. Where possible, use dry methods for cleaning, such as vacuum exhaust, which do not generate dust formation.

***Measures to protect the environment***

No special measures required.

**7.1.2 Advice on general occupational hygiene**

Do not eat, drink or smoke when working. Wear dust respirator and protective goggles in dusty environment. Use protective gloves to avoid skin contact.

**7.2. Conditions for safe storage, including any incompatibilities**

Cement should be stored in dry (minimizing internal condensation), water-protected conditions, clean and protected from contamination.

Do not enter storage areas for cement such as silos, tanks, silo vehicles or other containers without suitable safety precautions, because there is a danger of being buried and suffocated. In such confined spaces, cement can form walls and bridges, which can however collapse or fall unexpectedly.

Do not use aluminium containers due to incompatibility of the materials.

For cements containing chromium(VI) reducing agents (see Section 15) please note that as a result of inappropriate storage (ingress of moisture) or expiration, the contained chromate reducers can lose their effectiveness, and a sensitizing effect of cement upon skin contact cannot be excluded (see Subsection 2.3).

Storage class: VCI Storage class 13 (non-flammable solids).

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Version 4.3 13.12.2017

Replaces all previous versions

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**7.3. Specific end use(s)**

This product is assigned to GISCODE ZP 1 (cement-based products, low-chromate) (see Section 15). Further information on safe handling, protective measures and rules of conduct can be found in GISCODE ZP 1. This is available as part of the Hazardous Substances Information System GISBAU of the German Accident Prevention & Insurance Association for the building trade (Berufsgenossenschaft der Bauwirtschaft) at [www.gisbau.de](http://www.gisbau.de).

**SECTION 8: Exposure controls/personal protection**

**8.1. Control parameters**

Type of limit value	Limit value		Peak limit		Origin	Monitoring procedure, e.g.
<b>General dust limit</b>						
Occupational exposure limit	8 h	1.25 mg/m <sup>3</sup> (R) 10 mg/m <sup>3</sup> (I)	2(II) 15 min	20 (E)	TRGS 900	TRGS 402
<b>Water-soluble chromium(VI)</b>						
Condition of restriction		2 ppm. in cement	Not determined		Regulation (EC) No. 1907/2006	EN 196-10

(R): Respirable dust fraction; (I): Inhalable dust fraction

**8.2. Exposure controls**

To comply with occupational exposure limits, combinations of technical and/or individual protective measures are often required. If no adequate workplace measurements are available for exposure, an exposure assessment and selection of appropriate protective measures based on the MEASE tool (Reference 3) may be carried out. Engineering controls (table in 8.2.1) and individual protective measures (table in 8.2.2) are recommended for the identified uses in the professional sector (Section 16). The tables are to be read in such a way that A can only be combined with A, and B can only be combined with B. It must also be taken into account that the information applies to continuous exposure for 8 hours per day and 5 days in the week.

For the private user, the products must only be used outdoors or in well ventilated rooms and personal protective equipment is to be worn (general information in 8.2.2).

**8.2.1 Appropriate engineering controls**

Measures to prevent generation and spreading of dust, for example suitable ventilation systems and cleaning methods, which do not stir up dust.

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Version 4.3 13.12.2017

Replaces all previous versions

Print date: 13.12.2017

Exposure scenario	PROC*	Exposure	Technical installation	Efficiency
Industrial manufacturing/ formulation of hydraulic binding agents and building materials	2, 3	Duration is not restricted (up to 480 minutes per shift, 5 shifts a week)	Not required	-
	14, 26		A) Not required or B) Generic local exhaust ventilation	- 78 %
	5, 8b, 9		A) General ventilation or B) Generic local exhaust ventilation	17 % 78 %
Industrial use of dry hydraulic binding agents and building materials (indoor, outdoor)	2		Not required	-
	14, 22, 26		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 use of wet suspensions of hydraulic binding agents and building materials (indoor, outdoor)	2, 5, 8b, 9, 10, 13, 14		Not required	-
	7		A) Not required or B) Generic local exhaust ventilation	- 78 %
Professional use of dry hydraulic binding agents and building materials (indoor, outdoor)	2		Not required	-
	9, 26		A) Not required or B) Generic local exhaust ventilation	- 72 %
	5, 8a, 8b, 14	A) Not required or B) Generic local exhaust ventilation	- 87 %	
Professional use of wet suspensions of hydraulic binding agents and building materials (indoor, outdoor)	19	Local exhaust ventilation is not required, but process only in well ventilated rooms or outdoors	-	
	11	A) Not required or B) Generic local exhaust ventilation	- 72 %	
Professional use of wet suspensions of hydraulic binding agents and building materials (indoor, outdoor)	2, 5, 8a, 8b, 9, 10, 13, 14, 19	Not required	-	

\* Definition in Section 16



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Products: Portland Cement, Portland Composite Cement, Portland Slag Cement, Blast Furnace Cement, Masonry Cement, Hydraulic Road Binders in accordance with DIN EN 13282-1, Hydraulic Lime

Version 4.3 13.12.2017

Replaces all previous versions

Print date: 13.12.2017

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

**General information:** Do not eat, drink or smoke when working. Wash hands and if necessary shower before breaks and after work to remove adherent cement. Avoid contact with eyes and skin. After working with cement, workers should wash or shower and use skin care products. Clean contaminated clothing, footwear, watches, etc. thoroughly before re-using them.

**Eye/face protection**



Use tight-fitting safety goggles according to EN 166 where dust is formed or in case of risk of spilling.

**Skin protection**



Wear waterproof, abrasion and alkali-resistant gloves. Leather gloves are not suitable due to their water penetrability, and can release chromate-containing compounds. Chemical gloves (Cat. III) are not required for working with cement. Tests have shown that nitrile impregnated cotton gloves (layer thickness c. 0.15 mm) provide adequate protection over a period of 480 min. Soaked gloves should be changed. Keep a change of gloves handy. General information on skin protection can be found in Rule BGR/GUV-R 195 of the German Accident Prevention & Insurance Association. Wear closed long-sleeved protective clothing and thick boots. If contact with wet cement cannot be avoided, the protective clothing should also be waterproof. Care should be taken to ensure that wet cement does not enter the shoe or boot from above. Observe the skin protection plan. In particular, use skin care products after working.

**Respiratory protection**



When there is a danger of exceeding exposure limit values, e.g. during open handling of dry powder products, a suitable respirator mask is to be used.

**Mixing and filling of dry cement in open systems, e.g. manual mixing of cement paste or cement mortar, transfer of sacked product into mixing machines:** If it is not possible to adhere to occupational exposure limits by means of dust control measures, e.g. local suction units, particle-filtering half masks of the FFP type (according to EN 149) must be used (see table).

Exposure scenario	PROC*	Exposure	Specification of respiratory protective equipment (RPE)	RPE efficiency - assigned protection factor (APF)
Industrial manufacturing/ formulation of hydraulic binding agents and building materials	2, 3	Duration is not restricted (up to 480 minutes per shift, 5 shifts a week)	Not required	-
	14, 26		A) FFP1 or B) Not required	APF = 4  -
	5, 8b, 9		A) FFP2 or B) FFP1	APF = 10  APF = 4

**Cement, Masonry Cement, Hydraulic road binders, Hydraulic Lime (low-chromate)**

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Version 4.3 13.12.2017

Replaces all previous versions

Print date: 13.12.2017

Exposure scenario	PROC*	Exposure	Specification of respiratory protective equipment (RPE)	RPE efficiency - assigned protection factor (APF)
Industrial use of dry hydraulic binding agents and building materials (indoor, outdoor)	2		Not required	-
	14, 22, 26		A) FFP1 or B) Not required	APF = 4  -
	5, 8b, 9		A) FFP2 or B) FFP1	APF = 10  APF = 4
Industrial use of wet suspensions of hydraulic binding agents and building materials (indoor, outdoor)	2, 5, 8b, 9, 10, 13, 14		Not required	-
	7		A) FFP1 or B) Not required	APF = 4  -
Professional use of dry hydraulic binding agents and building materials (indoor, outdoor)	2		FFP1	APF = 4
	9, 26		A) FFP2 or B) FFP1	APF = 10  APF = 4
	5, 8a, 8b, 14		A) FFP3 or B) FFP1	APF = 20  APF = 4
	19		FFP2	APF = 10
Professional use of wet suspensions of hydraulic binding agents and building materials (indoor, outdoor)	11		A) FFP1 or B) Not required	APF = 4  -
	2, 5, 8a, 8b, 9, 10, 13, 14, 19		Not required	-

\* Definition in Section 16

No respiratory protection is required for the **manual and machine processing of ready-to-use cement paste, cement mortar and concrete.**

General information on skin protection can be found in Rule BGR/GUV-R 190 of the German Accident Prevention & Insurance Association.

Instruction of employees in the correct use of personal protection equipment is required in order to ensure its necessary effectiveness.

### 8.2.3 Environmental exposure controls

**Air:** Compliance with dust emission limit values in accordance with the Technical Instructions on Air Quality.

## Cement, Masonry Cement, Hydraulic road binders, Hydraulic Lime (low-chromate)

Products: Portland Cement, Portland Composite Cement, Portland Slag Cement, Blast Furnace Cement, Masonry Cement, Hydraulic Road Binders in accordance with DIN EN 13282-1, Hydraulic Lime

Version 4.3 13.12.2017

Replaces all previous versions

Print date: 13.12.2017

**Water:** Do not unintentionally discharge cement in large quantities into groundwater or wastewater systems. An increase in pH value is possible through exposure. At a pH value above 9, ecotoxicological effects may occur. Water directed or drained off into the wastewater system or surface water should therefore not lead to such a significant pH value. Wastewater and groundwater regulations must be observed.

**Soil:** Compliance with the German Federal Soil Protection Law (BBodSchG) and the Federal Soil Protection and Contaminated Sites Ordinance (BBodSchV). No special control measures required.

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## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

- (a) Appearance: Cement is a finely ground inorganic solid (grey or white powder)
- (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: > 1250 °C
- (f) Initial boiling point or boiling range: Not applicable as under normal atmospheric conditions the melting point is above 1250 °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 it is a solid and non-flammable material
- (j) Upper/lower flammability or explosion limits: Not applicable as it is not gaseous
- (k) Vapour pressure: Not applicable as melting point > 1250 °C
- (l) Vapour density: Not applicable as melting point > 1250 °C
- (m) Relative density: 2.75-3.20 g/cm<sup>3</sup>; bulk density: 0.9-1.5 g/cm<sup>3</sup>
- (n) Solubility in water (T = 20 °C): low (0.1-1.5 g/l)
- (o) Partition coefficient: n-octanol/water: Not applicable as it is inorganic
- (p) Auto-ignition temperature: Not applicable (not pyrophoric – no organo-metallic, organo-metalloid or organo-phosphine bindings or derivatives, and no other pyrophoric components)
- (q) Decomposition temperature: Not applicable as no inorganic peroxides are present
- (r) Viscosity: Not applicable as it is no liquid
- (s) Explosive properties: Not explosive and not pyrotechnical. No gas development or self-sustaining exothermic chemical reactions
- (t) Oxidizing properties: Not applicable as cement does not cause or contribute to the combustion of other materials

### 9.2. Other information

Not applicable.

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## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Cement is a hydraulic material. When mixed with water an intended reaction takes place. As a result, cement hardens and forms a solid mass, which does not react with its environment.

### 10.2. Chemical stability

Cement is stable as long as it is properly stored (see Section 7). It should be kept dry. Contact with incompatible materials should be avoided. Wet cement is alkaline and incompatible with acids, ammonium salts, aluminium and other base metals. Here, hydrogen can be formed. Cement

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Version 4.3 13.12.2017

Replaces all previous versions

Print date: 13.12.2017

dissolves in hydrofluoric acid, forming corrosive silicon tetrafluoride gas. Avoid contact with these incompatible materials.

With water, cement forms calcium silicate hydrates, calcium aluminate hydrates and calcium hydroxide.

The calcium silicates of the cement may react with strongly oxidising agents such as fluorides.

**10.3. Possibility of hazardous reactions**

Not applicable.

**10.4. Conditions to avoid**

Moisture during storage can lead to clumping and loss of product quality.

**10.5. Incompatible materials**

Acids, ammonium salts, aluminium or other base metals.

**10.6. Hazardous decomposition products**

Cement does not decompose into hazardous components.

**SECTION 11: Toxicological information**

**11.1. Information on toxicological effects**

Hazard class	Cat.	Effect	Reference
Acute toxicity - dermal	-	Limit test, rabbit, 24 hours exposure, 2,000 mg/kg body weight – no lethality. Based on available data, the classification criteria are not met.	(4)
Acute toxicity - inhalation	-	Limit test, rat, with 5 g/m <sup>3</sup> , no acute toxicity. Study was conducted with Portland cement clinker, the main component of cement. Based on available data, the classification criteria are not fulfilled.	(10)
Acute toxicity - oral	-	No acute oral toxicity was found in animal studies with cement kiln dusts and cement dusts. Based on available data, the classification criteria are not fulfilled.	Literature survey
Skin corrosion/ irritation	2	Cement has an irritating effect on skin and mucous membranes. Dry cement in contact with moist skin or skin in contact with damp or wet cement can lead to various irritating and inflammatory skin reactions, e.g. redness and chaps. Prolonged contact in combination with mechanical abrasion may cause severe skin damage.	(4) and human experience
Serious eye damage/irritation	1	In the in vitro test, Portland cement clinker (the main component of cement) showed varying degrees of impact on the cornea. The calculated "irritation index" was 128. Direct contact with cement can lead to cornea damage due to either an immediate or delayed irritation or inflammation, or mechanical stress. Direct contact with large amounts of dry cement or splashes of wet cement may have effects ranging from moderate eye irritation (e.g. conjunctivitis or blepharitis) to serious eye damage and blindness.	(11), (12) and human experience
Skin sensitisation	1B	Some individuals may develop eczema after contact with wet cement. This is triggered either by pH value (irritant contact dermatitis) or by immunological reactions with water-soluble chromium(VI) (allergic contact dermatitis).	(5), (13)
Respiratory sensitisation	-	There is no indication of respiratory sensitization. Based on available data, the classification criteria are not fulfilled.	(1)

**Cement, Masonry Cement, Hydraulic road binders, Hydraulic Lime (low-chromate)**

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Version 4.3 13.12.2017

Replaces all previous versions

Print date: 13.12.2017

Germ cell mutagenicity	-	No indication of germ cell mutagenicity. Based on available data, the classification criteria are not fulfilled.	(14), (15)
Carcinogenicity	-	A causal relationship between cement and cancer has not been determined. Epidemiological studies were not indicative of an association between exposure to cement and cancer. Portland cement is not classified as a human carcinogen according to ACGIH A4: "Agents causing concern that they could be carcinogenic for humans, but cannot be assessed conclusively because of a lack of data." In vitro tests or animal experiments do not provide sufficient evidence of carcinogenicity to assign this substance to another classification. Portland cement contains more than 90 % Portland cement clinker. Based on available data, the classification criteria are not fulfilled.	(1)  (16)
Reproductive toxicity	-	Based on available data, the classification criteria are not fulfilled.	No evidence from human experience
Specific target organ toxicity (STOT) – single exposure	3	Cement dust exposure can lead to irritation of the respiratory system (throat, neck, lungs). Coughing, sneezing, and shortness of breath can be the result if the exposure is above the occupational exposure limit. Occupational exposure to cement dust can lead to impairment of respiratory functions. However, currently there is insufficient evidence to deduce a dose-effect relationship.	(1)
Specific target organ toxicity (STOT) – repeated exposure	-	Long-term exposure to respirable cement dust above the occupational exposure limit may cause coughing, shortness of breath and chronic obstructive changes in the respiratory tract. No chronic effects have been observed at low concentrations. Based on available data, the classification criteria are not fulfilled.	(17)
Aspiration hazard	-	Not applicable as cement is not available as an aerosol.	

Cements (common cements) and Portland cement clinkers have the same toxicological and ecotoxicological properties.

**Medical conditions aggravated by exposure**

Cement may aggravate existing skin, eye and respiratory tract diseases, for example emphysema or asthma

**SECTION 12: Ecological information**

**12.1. Toxicity**

Cement is not considered hazardous to the environment. Ecotoxicological studies with Portland cement on *Daphnia magna* (U.S. EPA, 1994a) [Reference (6)] and *Selenastrum coli* (U.S. EPA, 1993) [Reference (7)] have shown little toxicological impact. Therefore, LC50 and EC50 values could not be determined [Reference (8)]. No toxic effects on sediments were determined either [Reference (9)]. The release of large amounts of cement in water can however lead to rise in pH and thus be toxic for aquatic life under certain circumstances.

**12.2. Persistence and degradability**

Not applicable, as cement is an inorganic mineral material. After hydration, residual cement presents no toxicological risk.

**Cement, Masonry Cement, Hydraulic road binders, Hydraulic Lime (low-chromate)**

Products: Portland Cement, Portland Composite Cement, Portland Slag Cement, Blast Furnace Cement, Masonry Cement, Hydraulic Road Binders in accordance with DIN EN 13282-1, Hydraulic Lime

Version 4.3 13.12.2017

Replaces all previous versions

Print date: 13.12.2017

**12.3. Bioaccumulative potential**

Not applicable, as cement is an inorganic mineral material. After hydration, residual cement presents no toxicological risk.

**12.4. Mobility in soil**

Not applicable, as cement is an inorganic mineral material. After hydration, residual cement presents no toxicological risk.

**12.5. Results of PBT and vPvB assessment**

Not applicable, as cement is an inorganic mineral material. After hydration, residual cement presents no toxicological risk.

**12.6. Other adverse effects**

Not applicable.

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**SECTION 13: Disposal considerations**

**13.1. Waste treatment methods**

**Product that has exceeded the shelf life of the reducing agent**

(and when demonstrated that it contains more than 0.0002% soluble Cr (VI)): The product shall not be used or sold other than for use in controlled closed and totally automated processes or treated again with a reducing agent.

**Unused residue of dry product**

Pick up dry residue. Mark the containers. Reuse where possible depending upon shelf life considerations while avoiding dust exposure. In case of disposal, harden with water and dispose of according to "Product after addition of water, hardened"

**Wet products and product sludge**

Allow to harden, avoid entry in sewage and drainage systems or into bodies of water. Dispose of as described below under "Product after addition of water, hardened".

**Product after addition of water, hardened**

Dispose of according to local legislation. Avoid entry into the sewage water system. Dispose of the hardened product as concrete waste or concrete sludge.

Waste code according to the Waste Catalogue Ordinance depending on origin: as 17 01 01 (concrete) or 10 13 14 (waste concrete or concrete sludge)

**Packaging**

Completely empty the packaging and send it for recycling. Otherwise disposal of the completely emptied packaging according to waste code 15 01 01 (waste paper and cardboard packaging) or 15 01 05 (composite packaging) of the Waste Catalogue Ordinance.

**Cement, Masonry Cement, Hydraulic road binders, Hydraulic Lime (low-chromate)**

Products: Portland Cement, Portland Composite Cement, Portland Slag Cement, Blast Furnace Cement, Masonry Cement, Hydraulic Road Binders in accordance with DIN EN 13282-1, Hydraulic Lime

Version 4.3 13.12.2017

Replaces all previous versions

Print date: 13.12.2017

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**SECTION 14: Transport information**

Cement is not subject to the international regulation on the transport of dangerous goods (IMDG, IATA, ADR/RID). No dangerous goods classification is therefore required.

**14.1. UN number**

Not applicable.

**14.2. UN proper shipping name**

Not applicable.

**14.3. Transport hazard class(es)**

Not applicable.

**14.4. Packing group**

Not applicable.

**14.5. Environmental hazards**

Not applicable.

**14.6. Special precautions for users**

Not applicable.

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

Not applicable.

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**SECTION 15: Regulatory information**

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

***EU regulations***

Limitations on use:

According to Annex XVII Paragraph 47 of EC Regulation 1907/2006 (REACH), the marketing and use of cements and cement-containing preparations is subject to restriction:

1. Cement and cement-containing mixtures shall not be used or placed on the market if they contain, when hydrated, more than 0.0002 % soluble chromium(VI) of the total dry weight of the cement.
2. If reducing agents are used, then without prejudice to the application of other Community provisions on the classification, packaging and labelling of dangerous substances and mixtures, suppliers shall ensure before placing on the market that the packaging of cement and cement-containing mixtures is clearly readable and durably indicating when the product was packaged under what conditions and for how long it can be stored without the effect of the reducing agent decreasing and the content of water-soluble chromium(VI) exceeding the limit value specified in Number 1.
3. By way of derogation, Numbers 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.



## Cement, Masonry Cement, Hydraulic road binders, Hydraulic Lime (low-chromate)

Products: Portland Cement, Portland Composite Cement, Portland Slag Cement, Blast Furnace Cement, Masonry Cement, Hydraulic Road Binders in accordance with DIN EN 13282-1, Hydraulic Lime

Version 4.3 13.12.2017

Replaces all previous versions

Print date: 13.12.2017

- The standard approved by the European Committee for Standardization (CEN) for testing the content of water-soluble chromium(VI) in cement and cement-containing mixtures is to be applied as the procedure for the verification of compliance with Paragraph 1.

Within the scope of the "Agreement on Workers' Health Protection through the Good Handling and Use of Crystalline Silica and Products containing it", manufacturers of cement have committed themselves to implement "Best Practices" for safe handling (<http://www.nepsi.eu/good-practice-guide.aspx>).

### German national legislation/requirements

Ordinance on Hazardous Substances (Gefahrstoffverordnung – GefStoffV)

Water Hazard Class: WGK 1 (slightly hazardous to water), self-assessment according to AwSV of 18.04.2017

GISCODE: ZP 1 (cement-containing products, low in chromate)

Storage Class according to TRGS 510: Storage Class 13 (non-combustible solids)

European Waste Catalogue Ordinance, EWC (Abfallverzeichnis-Verordnung, AVV)

Technical Rules for Hazardous Substances 900: Occupational exposure limits (TRGS 900)

Technical Rules for Hazardous Substances 402: Identification and assessment of the risks from activities involving hazardous substances: inhalation exposure (TRGS 402)

### UK national legislation/requirements

CONIAC Health Hazard Information Sheet No. 26 (CEMENT)

Health and Safety at Work etc Act 1974

Control of Substances Hazardous to Health (Regulations)

PORTLAND CEMENT DUST – criteria document for an occupational exposure limit. June 1994 (ISBN 07176 – 0763 – 1)

HSE Guidance Notes EH26 (Occupational Skin Diseases – Health and Safety Precautions)

HSE Guidance Note EH40 (Workplace Exposure Limits)

Any authorised manual on First Aid by St. John's/St. Andrew's/Red Cross

Manual Handling Operations Regulations

Environmental Protection Act

## 15.2. Chemical Safety Assessment

A chemical safety assessment has not been carried out on the mixture.

## SECTION 16: Other information

### (a) Indication of changes

Compared to Version 2.0, in Section 3.2 Portland cement clinker and flue dust are classified with "allergic skin reaction 1B" instead of "allergic skin reaction 1". In Section 8.1 the new occupational exposure limit for the R-fraction of general dust applies. The occupational exposure limit for Portland cement is no longer included because it is no longer included in TRGS 900. In addition, editing changes have been made in Sections 1.2, 1.4, 2.1, 2.2, 2.3, 3.1, 3.2, 7.3, 8.1, 8.2, 13.1, 15.1, 15.2 and 16.

### (b) 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

AwSV Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (Ordinance on Installations for the Handling of Substances Hazardous to Water)

CAS Chemical Abstracts Service



**Cement, Masonry Cement, Hydraulic road binders, Hydraulic Lime (low-chromate)**

Products: Portland Cement, Portland Composite Cement, Portland Slag Cement, Blast Furnace Cement, Masonry Cement, Hydraulic Road Binders in accordance with DIN EN 13282-1, Hydraulic Lime

Version 4.3 13.12.2017

Replaces all previous versions

Print date: 13.12.2017

CLP	Classification, labelling and packaging (Regulation (EC) No 1272/2008)
EC50	Half maximal effective concentration
ECHA	European Chemicals Agency
EINECS	European Inventory of Existing Commercial chemical Substances
EPA	Type of high efficiency air filter
HEPA	Type of high efficiency air filter
IATA	International Air Transport Association
IMDG	International agreement on the Maritime transport of Dangerous Goods
IUPAC	International Union of Pure and Applied Chemistry
LC50	Median lethal dose
MEASE	Metals estimation and assessment of substance exposure
PBT	Persistent, bio-accumulative and toxic
PROC	Process category
REACH	Registration, Evaluation, Authorisation and restriction of Chemicals (Regulation (EC) 1907/2006)
SDB	Safety Data Sheet
STOT	Specific Target Organ Toxicity
TRGS	Technische Regeln für Gefahrstoffe (Technical Rules for Hazardous Substances)
UVCB	Substances of Unknown or Variable composition, Complex reaction products or Biological materials
VCI	Verband der chemischen Industrie e.V. (German chemical industry association)
vPvB	Very persistent, very bio-accumulative

**(c) Process categories and descriptors**

For the professional user, process categories and descriptors can be assigned according to the ECHA Guidance R.12 (ECHA-2010-G-05) (see table).

PROC	Identified Uses	Manufacture/ Formulation of hydraulic binding agents and building materials	Professional/ Industrial use of
2	Use in closed, continuous process with occasional controlled exposure (e.g. sampling)	X	X
3	Use in closed batch process (formulation)	X	X
5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)	X	X
7	Industrial spraying		X
8a	Transfer of substance or preparation from/to vessels/large containers at non-dedicated facilities		X
8b	Transfer of substance or preparation from/to vessels/large containers at dedicated facilities	X	X
9	Transfer into small containers (dedicated filling plant, including weighing)	X	X
10	Roller application or brushing		X
11	Non-Industrial spraying		X
13	Treatment of articles by dipping and pouring		X
14	Production of preparations or articles by tableting, compression, extrusion, pelletisation	X	X
19	Hand-mixing with intimate contact and only personal protective equipment (PPE) available		X
22	Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting		X
26	Handling of solid inorganic substances at ambient temperature	X	X

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Products: Portland Cement, Portland Composite Cement, Portland Slag Cement, Blast Furnace Cement, Masonry Cement, Hydraulic Road Binders in accordance with DIN EN 13282-1, Hydraulic Lime

Version 4.3 13.12.2017

Replaces all previous versions

Print date: 13.12.2017

**(d) Wording of the R-phrases, hazard statements, safety advice and precautionary statements**

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.
EUH203	Contains chromium(VI). May produce an allergic reaction.

**(e) Classification according to Regulation (EC) No. 1272/2008 [CLP]**

Skin irritation 2, H315  
 Serious eye damage 1, H318  
 Specific target organ toxicity single exposure 3, H335

**(f) Key literature references and sources of data**

- (1) *Portland Cement Dust - Hazard assessment document EH75/7*, UK Health and Safety Executive, 2006: <http://www.hse.gov.uk/pubns/web/portlandcement.pdf>.
- (2) *Technische Regel für Gefahrstoffe „Arbeitsplatzgrenzwerte“, Ausgabe: Januar 2006 BArBI Heft 1/2006 S. 41-55 zuletzt geändert and ergänzt: GMBI 2014 S. 271-274 v. 2.4.2014 [Nr. 12]*.
- (3) MEASE 1.02.01 Exposure assessment tool for metals and inorganic substances, EBRC Consulting GmbH for Eurometaux, 2010: <http://www.ebrc.de/ebrc/ebrc-mease.php>.
- (4) *Observations on the effects of skin irritation caused by cement*, Kietzman et al, *Dermatosen*, 47, 5, 184-189 (1999).
- (5) *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.
- (6) 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).
- (7) 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).
- (8) *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.
- (9) *Final report Sediment Phase Toxicity Test Results with Corophium volutator for Portland clinker* prepared for Norcem A.S. by AnalyCen Ecotox AS, 2007.
- (10) TNO report V8801/02, *An acute (4-hour) inhalation toxicity study with Portland Cement Clinker CLP/GHS 03-2010-fine in rats*, August 2010.
- (11) TNO report V8815/09, *Evaluation of eye irritation potential of cement clinker G in vitro using the isolated chicken eye test*, April 2010.
- (12) TNO report V8815/10, *Evaluation of eye irritation potential of cement clinker W in vitro using the isolated chicken eye test*, April 2010.

**Cement, Masonry Cement, Hydraulic road binders, Hydraulic Lime (low-chromate)**

Products: Portland Cement, Portland Composite Cement, Portland Slag Cement, Blast Furnace Cement, Masonry Cement, Hydraulic Road Binders in accordance with DIN EN 13282-1, Hydraulic Lime

Version 4.3 13.12.2017

Replaces all previous versions

Print date: 13.12.2017

- (13) *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).
- (14) *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
- (15) *Cytotoxicity and genotoxicity of cement dusts in A549 human epithelial lung cells in vitro*; Gminski et al, Abstract DGPT conference Mainz, 2008.
- (16) *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.
- (17) *Exposure to thoracic dust, airway symptoms and lung function in cement production workers*; Nordby, K.-C., et al; Eur Respir J, 2011. 38(6).

**(g) Methods according to Article 9 of Regulation (EC) 1272/2008 [CLP] for the evaluation of information for the purpose of classification**

Evaluation according to Regulation (EC) Nr. 1272/2008	Classification procedure
Skin irritation 2, H315	On the basis of test data
Serious eye damage 1, H318	On the basis of test data
Specific target organ toxicity single exposure 3, H335	Human experience

**(h) Training advice**

In addition to training programs for employees on the topics of health, safety and the environment, companies must ensure that their employees are able to read and understand the safety data sheet, and to implement the requirements.

**Disclaimer**

The information given in this safety data sheet describes the safety requirements of our product and is based on the currently available knowledge. It does not represent any warranty of end product properties. Existing legislation, ordinances and regulations, including those not mentioned in this safety data sheet, are to be observed by the recipient of our products at his own responsibility.