

## 1. MIXTURE IDENTIFICATION AND COMPANY/ENTERPRISE DETAILS

### 1.1 Mixture identification

Common white cement (hereinafter referred to as 'common cement') compliant with the specific technical standards.

### 1.2 Relevant identified uses of the mixture and not recommended uses

The common cement is used as a hydraulic binder in the production of concrete, mortars, plaster, etc. Common cements and cement containing mixtures (hydraulic binders) have both an industrial and professional usage. Identified uses of cements and cement-containing mixtures cover dry and moist-suspension products (mixture).

PROC	Identified uses – Usage description	Production/ Formulation of Building and construction Materials	Professional/Industrial usage of
2	Usage in a closed and continuous process, with occasional controlled exposure	X	X
3	Usage in a closed batch process (synthesis or formulation)	X	X
5	Mixing or blending in batch processes for the formulation of mixtures and articles (contact at different stages and/or significant contact)	X	X
7	Application with industrial spray		X
8a	Transferring of a substance or mixture (filling/emptying) from/to vessels /large containers, at non dedicated facilities		X
8b	Transferring of a substance or mixture (filling/emptying) from/to vessels /large containers, at dedicated facilities	X	X
9	Transferring of a substance or mixture into small containers (dedicated filling line, weighing included)	X	X
10	Application with rollers or brushes		X
11	Application with non industrial spray		X
13	Treatment of articles by dipping and pouring		X
14	Production of mixtures or articles in tablet compression, compression, extrusion, pelletizing	X	X
19	Hand-mixing with direct contact, with the use of only a personal protective equipment (PPE)		X
22	Working operation in potentially closed processes with minerals/metals at high temperatures. Industrial environment		X
26	Handling of inorganic solid substances at room temperature	X	X

### 1.3 Information on the provider of the safety data sheet

Company: COLACEM S.p.A.  
Registered Office Via della Vittorina n. 60 – 06024 Gubbio (PG)  
Telephone: 075/92.401 - Fax: 075/92.76.676  
E-mail: [sicurezza@colacem.it](mailto:sicurezza@colacem.it)

#### 1.4 Emergency Contacts/telephone numbers

Hospital	City	Address – Zip Code	Telephone
Azienda Ospedaliera Università di Foggia	Foggia	V.le Luigi Pinto, 1 - 71122	0881-732326
Azienda Ospedaliera "A. Cardarelli"	Napoli	Via A. Cardarelli, 9 - 80131	081-7472870
CAV Policlinico "Umberto I"	Roma	V.le del Policlinico,155 - 00161	06-49978000
CAV Policlinico "A. Gemelli"	Roma	Largo Agostino Gemelli, 8 - 00168	06-3054343
Azienda Ospedaliera "Careggi" U.O. Tossicologia Medica	Firenze	Largo Brambilla, 3 - 50134	055-7947819
CAV Centro Nazionale di Informazione Tossicologica	Pavia	Via Salvatore Maugeri, 10 - 27100	0382-24444
Ospedale Niguarda Ca' Granda	Milano	Piazza Ospedale Maggiore,3 - 20162	02-66101029
Azienda Ospedaliera Papa Giovanni XXII	Bergamo	Piazza OMS, 1 - 24127	800883300

The service is available outside office hours: X  Yes  NO

## 2. IDENTIFICATION OF HAZARDS

### 2.1. Classification of the mixture according to the (UE) 1272/2008 (CLP) Regulation

Hazard class	Hazard category	HAZARD STATEMENTS
Skin irritation	2	H315: It causes skin irritation
Serious damages to the eyes /eye irritation	1	H318: It causes serious damages to the eyes
Skin sensitization	1 B	H317: It can cause an allergic skin reaction
Specific target organs toxicity (single exposure ) Respiratory system irritation	3	H335: It can irritate the respiratory system

### 2.2 Labeling elements

Pursuant to the (UE) 1272/2008 (CLP) Regulation



#### CAUTIONS

Hazard

#### Hazard statement

H318: It causes serious damages to the eyes

H315: It causes skin irritation

H317: It can cause an allergic skin reaction

H335: It can irritate the respiratory system

#### Precautionary statements/advise

P102 Keep out of reach of children .

P280: Wear protective gloves / clothing/Protect the eyes /Protect your face

P305+P351+P338+P312: IN CASE OF EYE CONTACT : carefully rinse with abundant water for several minutes . Remove contact lenses if possible and easy to do . Continue rinsing . In case of any discomforts, contact a POISON CONTROL CENTRE or a physician.

P302+P352+P333+P313: IN CASE OF SKIN CONTACT: wash with abundant water and soap . In case of skin irritation or rash, consult a doctor .

P261+P304+P340+P312: Avoid inhaling the dust . IN CASE OF INHALATION : move the person to the outdoors and keep it at rest in a position that can favor breathing . In case of any discomforts, contact a POISON CONTROL CENTRE or a physician.

P501: Disposal of the product/container shall be carried out in compliance with regulations and standards in force .

### 2.3 Other hazards

Cement, in the presence of water, for example, as in the production of concrete or mortar, or when it gets wet, produces a highly alkaline solution (an elevated pH due to the formation of calcium, sodium and potassium hydroxides).

Frequent inhalation of cement over a long period of time increases the risk of developing lung disease.

A repeated and prolonged contact of cement with wet skin, due to perspiration or moisture, may cause irritation and/or dermatitis. (Bibliography (4)).

In case of significant ingestion cement may cause ulcers in the digestive tract.

The cement does not meet the criteria for PBT or vPvB in accordance with Annex XIII of REACH (Regulation 1907/2006/CE).

## 3. COMPOSITION/INFORMATION ABOUT THE INGREDIENTS

### 3.1 Substances

Not applicable

### 3.2 Mixture

Common cements are produced in compliance with the EN 197-1 standard "Composition, specification and conformity criteria for common cements" and subsequent amendments .

Main Types	Denomination of 27 products (types of common cement)		Composition (mass percentage) <sup>a)</sup>										Secondary constituents			
			Main constituents													
			Clinker	Blast furnace slag	Silicon dioxide fumes	Pozzoolana		Fly ash		Limed schist	Limestone					
K	S	D <sup>b)</sup>	P	Q	V	W	T	L	LL							
CEM I	Portland Cement	CEM I	95 - 100	-	-	-	-	-	-	-	-	-	-	0 - 5		
CEM II	Slag Portland Cement	CEM II/A-S	80 - 94	6 - 20	-	-	-	-	-	-	-	-	-	0 - 5		
		CEM II/B-S	65 - 79	21 - 35	-	-	-	-	-	-	-	-	-	0 - 5		
	Silicon Dioxide fumes Portland Cement	CEM II/A-B	90 - 94	-	6 - 10	-	-	-	-	-	-	-	-	0 - 5		
	Pozzoolana Portland Cement	CEM II/A-P	80 - 94	-	-	6 - 20	-	-	-	-	-	-	-	0 - 5		
		CEM II/B-P	65 - 79	-	-	21 - 35	-	-	-	-	-	-	-	0 - 5		
		CEM II/A-Q	80 - 94	-	-	-	6 - 20	-	-	-	-	-	-	0 - 5		
	Fly ashes Portland Cement	CEM II/B-Q	65 - 79	-	-	-	21 - 35	-	-	-	-	-	-	0 - 5		
		CEM II/A-V	80 - 94	-	-	-	-	6 - 20	-	-	-	-	-	0 - 5		
		CEM II/B-V	65 - 79	-	-	-	-	21 - 35	-	-	-	-	-	0 - 5		
		CEM II/A-W	80 - 94	-	-	-	-	-	6 - 20	-	-	-	-	0 - 5		
	Limed schist Portland Cement	CEM II/B-W	65 - 79	-	-	-	-	-	21 - 35	-	-	-	-	0 - 5		
		CEM II/A-T	80 - 94	-	-	-	-	-	-	6 - 20	-	-	-	0 - 5		
	Limestone Portland Cement	CEM II/B-T	65 - 79	-	-	-	-	-	-	-	21 - 35	-	-	0 - 5		
		CEM II/A-L	80 - 94	-	-	-	-	-	-	-	-	6 - 20	-	0 - 5		
	Composite Portland Cement <sup>c)</sup>	CEM II/B-L	65 - 79	-	-	-	-	-	-	-	-	21 - 35	-	0 - 5		
CEM II/A-LL		80 - 94	-	-	-	-	-	-	-	-	-	6 - 20	0 - 5			
CEM II/B-LL		65 - 79	-	-	-	-	-	-	-	-	-	21 - 35	0 - 5			
CEM III	Slag Cement	CEM II/A-M	80 - 94	6 - 20										0 - 5		
		CEM II/B-M	65 - 79	21 - 35										0 - 5		
CEM IV	Pozzoolana Cement <sup>c)</sup>	CEM III/A	35 - 64	36 - 65	-	-	-	-	-	-	-	-	-	0 - 5		
		CEM III/B	20 - 34	66 - 80	-	-	-	-	-	-	-	-	-	0 - 5		
		CEM III/C	5 - 19	81 - 95	-	-	-	-	-	-	-	-	-	0 - 5		
CEM V	Composite Cement <sup>c)</sup>	CEM IV/A	65 - 89	-	11 - 35										0 - 5	
		CEM IV/B	45 - 64	-	36 - 55										0 - 5	
CEM V	Composite Cement <sup>c)</sup>	CEM V/A	40 - 64	18 - 30	-	18 - 30										0 - 5
		CEM V/B	20 - 38	31 - 50	-	31 - 50										0 - 5

a) The values in this table refer to the sum of the main and secondary constituents.

b) b) The silicon dioxide fume proportion is limited to 10%

c) In the CEM II/A-M and CEM II/B-M composite Portland cements, in the CEM IV/A and CEM IV/B pozzolana cements and in the CEM V/A and CEM V/B composite cements the main constituents different from clinker have to be stated in the cement description ( see the example in point 8).

### 3.2.1 Components that represent a health hazard

Substance	% in weight	CE Number	CAS	REACH Registration Number	Classification according to Reg. 1272/2008		
					Hazard class	Hazard category	Hazard statement
Portland Cement Clinker	5-100	266-043-4	65997-15-1	Exempt (Notification no. 02-2119682167-31-0000 – Updating of notification dated 1/7/2013 –Report Presentation no. QJ420702-40)	Skin irritation Skin sensitization Eye damages STOT SE	2 1B 1 3	H315 H317 H318 H335

The content of clinker in various types of cement is shown in the table in paragraph 3.2

The other components of cement under the Table in Paragraph 3.2, setting regulators, any other materials used as minor components, grinding additives have toxicological characteristics and risk levels equal or lower than those of clinker.

## 4. FIRST AID MEASURES

### 4.1 Description of first aid measures

#### General Rules

Personal protection equipment is not required for rescuers, who must avoid inhaling cement dust or contact with wet cement or mixtures containing it. In case this is not possible, rescuers shall wear the personal protection equipment described in Section 8.

#### In case of contact with eyes

Do not rub eyes to prevent any possible corneal damage caused by rubbing. If present, remove contact lenses. Tilt your head towards the affected eye, open eyelids and rinse abundantly with water for at least 20 minutes in order to remove all residues. If possible, use isotonic water (0.9% NaCl). Contact a specialist in occupational medicine or an ophthalmologist.

#### In case of contact with skin

For dry cement, remove and rinse well with abundant water. As for wet/moist cement, wash skin well with abundant water and soap with a neutral pH or an adequate mild detergent. Remove any contaminated clothing, shoes, glasses, watches, etc. cleaning everything thoroughly before reusing. Consult a doctor in all cases of burns or irritation.

#### In case of inhalation

Move the person to the outdoors. Any dust in the throat and nostrils should clear out naturally. Contact a physician if irritation persists, or if it occurs later, or if there is any discomfort, cough or other symptoms that persist.

#### In case of ingestion

Do not induce vomiting. If the person is conscious, wash the mouth out with water and have him/her drink a lot of water. Consult a physician immediately or contact a poison control center

### 4.2 Main symptoms and effects, both acute and delayed

**Eyes:** Eye contact with cement dust (wet or dry) may cause severe and potentially irreversible injury

**Skin :** Cement and its mixtures may have an irritating effect on wet skin ( due to perspiration or humidity) after prolonged contact or may cause dermatitis after repeated contact. Prolonged skin contact with wet cement or its moist mixtures, (concrete/fresh mortar etc.) may cause irritation, dermatitis or burns. For more details see Bibliography (1).

**Inhalation:** repeated inhalation of cement dust over a long period of time increases the risk of developing lung disease.

**Ingestion:** In case of accidental ingestion, cement may cause digestive tract ulcers

**Environment:** under normal usage conditions, cement is not hazardous to the environment .

### 4.3 Indication of when to see a doctor immediately or need special treatment

See what mentioned in paragraph 4.1. When you see a doctor, bring the SDS with you.

## 5. FIRE-FIGHTING MEASURES

### 5.1 Fire extinction means

Cement is not flammable.

### 5.2 Special hazards coming from the substance

Cement is not flammable or explosive and does not support combustion of other materials

### 5.3 Advice for fire-fighters

The cement does not present fire risks. No special protective equipment is required for fire-fighting personnel.

## 6. MEASURES TO UNDERTAKE IN CASE OF ACCIDENTAL RELEASE

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

#### 6.1.1 For those not directly involved

Wear protective equipment as described in Section 8 and follow the usage and safe handling recommendations found in Section 7.

#### 6.1.2 For those directly involved

Emergency procedures are not required.

In any case, protection of the respiratory tract, eyes and skin is necessary in situations with elevated dust levels.

### 6.2 Environmental precautions

Avoid the discharge or release of cement into sewage and drainage systems or water bodies. (e.g. water ways).

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

#### Dry cement

Use dry cleaning methods such as vacuum cleaners or vacuum extractors ( industrial portable units, equipped with high-efficiency particulate filters or equivalent techniques) that do not disperse dust into the environment. Never use compressed air.

Ensure that workers wear appropriate personal protective equipment and prevent the spreading of cement dust ( see Section 8) .

Avoid inhalation of cement dust and contact with skin.

Store spilled material in containers for further use.

#### Wet cement

Remove wet cement and store it in a container . Wait until the material is dry and solid before disposing it as described in Section 13.

### 6.4 References to other Sections

For further details, please see Sections 8 and 13.

## 7. HANDLING AND STORAGE

### 7.1 Precautions for safe handling

#### 7.1.1 Protective measures

Follow the advice given in Section 8.

To remove dry cement, see paragraph 6.3

#### Fire prevention measures

Not applicable.

#### Measures to prevent the creation of aerosols and dust

Do not sweep or use compressed air . Use dry cleaning methods (such as vacuum cleaners and vacuum extractors), which do not cause dispersion into the air.

#### Environmental protection measures

When handling the material prevent it from being dispersed into the environment .

#### 7.1.2 Information on general workplace hygiene

Do not handle or store it near food and beverages or smoking materials. In dusty environments, wear dust masks and goggles. Use protective gloves in order to prevent skin contact .

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

Cement must be stored in waterproof, dry , (e.g. with minimal internal condensation), clean and protected from contamination conditions.

Risk of burial: the cement may thicken or stick to the walls of the confined space in which it is stored. The cement may crumble, collapse or fall unexpectedly. In order to avoid burial or suffocation do not enter confined spaces, such as silos, containers, trucks for bulk transportation, or other storage containers that store or contain the cement without taking appropriate security measures.

Do not use aluminium containers due to the incompatibility of materials

**7.3 Specific end uses**

No further information (see Paragraph 1.2)

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**8.1 Control parameters**

The time weighted threshold limit value (TLV-TWA) adopted in the workplaces of the Association of American Industrial Hygienists (ACGIH) for the particulate is equal to 1 mg/m<sup>3</sup> (breathable fraction).

The exposure level is:

- DNEL (breathable fraction): 1 mg/m<sup>3</sup>
- DNEL (skin): not applicable
- DNEL (ingestion): not relevant

The environmental risk assessment is:

- PNEC (water): not applicable
- PNEC (sediment): not applicable
- PNEC (soil): not applicable

**8.2 Exposure Controls**

For each single Process Category (PROC), the user can choose between options A) and B) in the Table 8.2.1 below, based on what is more appropriate to their specific situation . When an option is chosen, this shall be selected in the Table 8.2.2 of Paragraph 8.2.2 "Individual protection measures, such as personal protective equipment – Specifications for the respiratory system protection equipment ". Therefore, combinations between A) – A) and B) – B) are only possible .

**8.2.1 Appropriate technical controls**

In plants where cement is handled, transported, loaded, unloaded and stored, measures must be taken in order to protect workers and to control the emission of dust in the workplace as shown in the table (DNEL = 1 mg/m<sup>3</sup>). Localized controls will be defined in relation to the situation, therefore the corresponding specific equipment shall be identified, shown in the table in Paragraph 8.2.2

**Table 8.2.1**

Exposure Scenario	PROC*	Exposure	Localized Controls	Efficiency
Industrial production/formulation of plumbing materials for building and construction	2, 3	Non-limited Duration (up to 480 minutes per shift, 5 shifts a week) (#) < 240 minutes	Not required	-
	14, 26		A) not required or B) general local ventilation	-
	5, 8b, 9		general local ventilation	78 %
Industrial uses of plumbing materials for building and construction (internal, external)	2		Not required	-
	14, 22, 26		A) not required or B) general local ventilation	78 %
	5, 8b, 9		general local ventilation	78%
Industrial uses, of wet suspension or plumbing materials for building and construction	7		A) not required or B) general local ventilation	78 %
	2, 5, 8b, 9, 10, 13, 14		Not required	-
	2		A) not required or B) general local ventilation	72 %
	9, 26		A) not required or B) general local ventilation	72 %

Professional uses of plumbing materials for building and construction (internal, external)	5, 8a, 8b, 14	general local ventilation	72 %
	19 (#)		localized controls are not applicable, The processes are in well ventilated areas or outdoors
Professional uses of wet suspensions or plumbing materials for building and construction	11	A) not required or B) general local ventilation	-
	2, 5, 8a, 8b, 9, 10, 13, 14, 19	Not required	72 %

\*PROC uses are identified as defined in paragraph 1.2.

### 8.2.2 Individual protection measures, such as personal protective equipment

**In general:** In plants where cement is handled, transported, loaded, unloaded and stored, measures must be taken in order to protect workers and to control the emission of dust in the workplace. Do not eat, drink, or smoke while handling cement to avoid contact with the skin or mouth. Immediately after having moved/or handled cement or products/ mixtures containing cement, it is necessary to wash with a neutral soap or an adequate mild detergent or use moisturizing creams. Remove contaminated clothing, shoes, glasses, etc and clean thoroughly before reusing.



#### Eye/Face Protection

Wear approved safety masks and goggles according to EN 166 standard when handling dry or wet cement to avoid contact with eyes.



#### Skin Protection

Use water-proof gloves, which are abrasion and alkali resistant, certified according to UNI EN 374 standard, parts 1,2,3, lined entirely in cotton, safety boots or shoes, protective long sleeved clothing, as well as skin care products (including moisturizing creams), in order to ensure maximum skin protection from prolonged contact with wet cement.



#### Respiratory system protection

When a person is potentially exposed to dust levels above the exposure limits, use appropriate respiratory protection commensurated with the level of dust and in compliance with relevant EN standards (filtering face piece certified according to UNI EN 149).

The personal protection equipment, defined according to localized controls and assessed for a DNEL = 1 mg/m<sup>3</sup>, are shown in the Table.

**Table 8.2.2**

Exposure Scenario	PROC*	Exposure	Specific respiratory protection equipment (RPE)	RPE Efficiency – Assigned protection factor (APF)
Industrial production/formulation of plumbing materials for building and construction	2, 3	Non-limited Duration (up to 480 minutes per shift, 5 shifts (a week); (#) < 240 minutes i	Not required	-
	14, 26		A) mask P2 (FF, FM) or B) mask P1 (FF, FM)	APF = 10 APF = 4
	5, 8b, 9		Mask P2 (FF, FM)	APF = 10
Industrial uses of plumbing materials for building and construction (internal, external)	2		Not required	-
	14, 22, 26		A) mask P2 (FF, FM) or B) mask P1 (FF, FM)	APF = 10 APF = 4
	5, 8b, 9		Mask P2 (FF, FM)	APF = 10
Industrial uses of wet suspensions or plumbing materials for building and construction	7		A) mask P2 (FF, FM) or B) mask P1 (FF, FM)	APF = 20 APF = 10
	2, 5, 8b, 9, 10, 13, 14		Not required	-
Professional uses of plumbing materials for building and construction (internal, external)	2		A) mask P2 (FF, FM) or B) mask P1 (FF, FM)	APF = 10 APF = 4
	9, 26		A) mask P2 (FF, FM) or B) mask P1 (FF, FM)	APF = 20 APF = 10
	5, 8a, 8b, 14	Mask P3 (FF, FM)	APF = 20	
	19 (#)	Mask P3 (FF, FM)	APF = 20	
	11	A) mask P2 (FF, FM)	APF = 20	



Professional uses of wet suspensions or plumbing materials for building and construction		or B) mask P1 (FF, FM)	APF = 10
	2, 5, 8a, 8b, 9, 10, 13, 14, 19	Not required	-

\*PROC uses are identified as defined in paragraph 1.2.

A list of the APFs related to the different RPEs (according to EN 529:2005) can be found in the MEASE glossary (16).

#### Thermal risks

Not applicable

#### 8.2.3 Environmental exposure controls

See the technical control measures in order to avoid the dispersion of cement dust in the environment .  
Adopt any measures necessary to ensure that the cement does not reach the water (ground water, sewer systems or surface water).

In plants where cement is handled, transported, loaded, unloaded and stored, measures must be taken in order to protect workers and to control the emission of dust in the workplace. In particular, preventive measures must ensure the control of the concentration of breathable particulate within the time weighted threshold limit value (TLV-TWA) adopted by the American Industrial Hygienists (ACGIH) for Portland cement.

The control of environmental exposure for the emission of cement particles in the air shall be carried out according to the available technology and regulations concerning the emission of dust particles in general.

The environmental exposure control is appropriate for the aquatic environment as cement emissions at different stages of the lifecycle (production and use) mainly applied to soil and wastewater. The aquatic effect and the risk assessment cover the effect on organisms/ ecosystems due to the possible changes to pH levels connected with the release of hydroxides. It is believed that the toxicity of the other dissolved inorganic ions may be negligible compared to the potential effect of the pH.

Any other effect that may occur during the production and usage is to be considered as taking place on a local scale. The pH of the discharge and surface water should not exceed the value 9. Otherwise it may affect municipal wastewater treatment systems (STPs) and industrial wastewater treatment systems (WWTPs). A gradual approach is recommended for such an exposure assessment.

Level 1: Obtain information on the pH of the discharge and the contribution of the cement to the resulting pH. If the pH is above 9, and mainly attributable to the cement, then further actions should be required to prove safe usage.

Level 2: Obtain information on the pH of collected water after the point of discharge. The pH level must not be higher than 9.

Level 3: Measure the pH of the water collected after the point of discharge. If the pH is less than 9, safe usage is reasonably proved. If the pH is above 9, risk management measures must be implemented: the discharge must be subject to neutralization, in order to ensure safe usage of cement during its production or during its use.

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

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### 9.1 Information about fundamental physical and chemical properties

- (a) **Aesthetic:** Cement is a solid inorganic powder material
- (b) **Odour:** odourless
- (c) **Odour threshold :** none, odourless
- (d) **pH:** (T = 20°C in water, ratio water/solid 1:2): 11-13.5
- (e) **Melting point:** > 1 250 °C
- (f) **Initial boiling point and boiling range:** not applicable since, under normal atmospheric conditions, the melting point is >1 250°C
- (g) **Flash point:** not applicable because it is not liquid
- (h) **Evaporation rate:** not applicable because it is not liquid
- (i) **Flammability (solid, gas):** not applicable as it is a non-combustible solid and does not cause or contribute to fire starting through friction
- (j) **Higher/lower flammability or explosion limit:** not applicable because it is not a flammable gas
- (k) **Vapour pressure:** not applicable because the melting point is > 1250 °C



- (l) **Vapour density:** not applicable because the melting point is > 1250 °C
- (m) **Relative density:** 2.75-3.20; Apparent density: 0.9-1.5 g/cm<sup>3</sup>
- (n) **Water solubility (T = 20 °C):** low (0.1-1.5 g/l)
- (o) **Partition coefficient:** n-octanol/water: not applicable because it is an inorganic substance
- (p) **Auto-ignition temperature:** not applicable (no pyrophoricity- no metal-organic, organ - metalloid or phosphine-organic bonds or their derivatives and no other pyrophoric constituents in its composition)
- (q) **Decomposition temperature:** not applicable due to the absence of organic peroxide
- (r) **Viscosity:** not applicable because it is not liquid
- (s) **Explosive properties:** not applicable. It is not explosive or pyrotechnic. It is not in itself capable, by means of chemical reactions, to produce gas temperatures and pressures and speeds as to cause such harm to the environment. It is not capable of self-sustaining exothermic chemical reactions
- (t) **Oxidizing properties:** not applicable because it does not cause or contribute to the combustion of other materials..

## 9.2 Other information

Not applicable

## 10. STABILITY AND REACTIVITY

### 10.1 Reactivity

When mixed with water, the cement hardens forming a stable mass that does not react with the environment.

### 10.2 Chemical stability

Cement is more stable the longer it is stored properly and appropriately (see Section 7). It must be kept dry. Contact with incompatible materials must be avoided.

Wet cement is alkaline and is incompatible with acids, ammonium salts, with aluminium and other non-noble metals. The cement, when in contact with hydrofluoric acid, decomposes producing corrosive silicon tetra fluoride gas. The cement reacts with water to form silicates and calcium hydroxide. The silicates in the cement react with powerful oxidizers such as fluorine, boron tri fluoride, chlorine tri fluoride, manganese tri fluoride, and oxygen bi fluoride.

The package integrity and compliance with the storage conditions mentioned in Paragraph 7.2) will allow to maintain and preserve the product quality .

### 10.3 Possibility of dangerous reactions

Not applicable

### 10.4 Conditions to avoid

Humid conditions during storage periods may cause clumping and the loss of product quality.

### 10.5 Incompatible materials

Acids, ammonium salts, aluminium or other non- noble metals. Uncontrolled usage of aluminium dust in wet cement should be avoided as it produces hydrogen.

### 10.6 Dangerous decomposition substances

Cement does not decompose into any dangerous substance.

## 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

Danger Class	Cat	Effect	Bibliography
Acute dermal toxicity	-	Rabbit limit test, 24 hour contact, , 2.000 mg/kg body weight – non lethal. Based on available data, does not fall within the criteria for classification	(2)
Acute inhalation toxicity	-	No acute inhalation toxicity observed. Based on available data, does not fall within the criteria for classification	(9)
Acute oral toxicity	-	No indication of oral toxicity studies with cement kiln dust. Based on available data, does not fall within the criteria for classification	From Bibliography
Corrosion/ Skin irritation	2	The cement, when in contact with moist skin may cause thickening, cracking and splitting of the skin. Prolonged contact in combination with existing abrasions can cause severe burns.	(2) Experience on man
Serious eye damage/ irritation	1	The clinker caused a set of heterogeneous effects on the cornea and the irritation index was calculated equal to 128. Direct contact with cement can cause corneal injury due to mechanical stress, immediate or delayed irritation or inflammation. Direct contact with large amounts	(10), (11)

		of dry cement or wet cement can cause projected effects ranging from moderate ocular irritation (e.g. Conjunctivitis or blepharitis) to chemical burns and blindness	
Skin sensitization	1B	Some individuals may develop eczema after exposure to wet cement dust, caused by both its high pH, which induces dermatitis after prolonged contact, and by an immunological reaction to soluble Cr (VI) , which causes allergic contact dermatitis. The reaction may appear in a variety of forms that can range from a mild rash to severe dermatitis and is a combination of the two mechanisms mentioned above. This sensitizing effect is not expected if the cement contains a reducing agent of water soluble Cr (VI) until the period specified of effectiveness of such a reducing agent has been exceeded. (reference (3)).	(3), (4), (17)
Respiratory Sensitization	-	There is no indication of sensitization of the respiratory system. Based on available data, does not fall within the criteria for classification.	(1)
Germ cell Mutagenicity (germ)	-	No indication. Based on available data, it does not fall within the criteria for classification.	(12), (13)
Carcinogenicity	-	No causal association has been established between exposure to Portland cement and cancer. The epidemiological literature does not support the identification of Portland cement as a suspected human carcinogen. Portland cement is not classifiable as a human carcinogen (A4 of ACGIH under: agents that cause concern about the possibility of being carcinogenic to humans, but which cannot be definitively assessed due to lack of data. In vitro studies or animals, give no indication of carcinogenicity, which are sufficient to classify the agent in one of the other notations). Based on available data, it does not fall within the criteria for classification..	(1) (14)
Reproduction toxicity	-	Based on available data, it does not fall within the criteria for classification	no evidence from experience on man
STOT – single exposure	3	Cement dust can irritate the throat and respiratory system. Coughing, sneezing and panting may occur following exposures above the occupational exposure limits. Overall, the evidence gathered clearly indicates that occupational exposure to cement dust has produced deficits in lung function. However, the evidence available at present is insufficient in establishing with certainty the dose-response relationship for these effects.	(1)
STOT – repeated exposure	-	There is an indication of COPD. The effects are acute and due to high exposures. There were no chronic effects or effects at low concentrations. Based on available data, it does not fall within the criteria for classification.	(15)
Danger in case of aspiration	-	Not applicable because cement is not utilized as an aerosol.	

Except for skin sensitization, Portland cement clinker and common cements have the same toxicological and eco toxicological properties.

#### Clinical conditions worsened by exposure

The inhalation of cement can worsen already existing diseases of the respiratory system and/or clinical conditions such as emphysema or asthma, and / or already existing skin and eye problems .

## 12. ECOLOGIC INFORMATION

### 12.1 Toxicity

The cement is not hazardous to the environment. The eco toxicity tests with Portland cement on Daphnia magna (Bibliography (5)) and Selenastrum coli (Bibliography (6)) have shown a low toxicological impact. Therefore LC50 and EC50 values cannot be determined (Bibliography (7)). There are no indications of toxicity in the sedimentary phase (Bibliography (8)). The addition of large amounts of cement to water may, however, cause an increase in pH, therefore it may be toxic to aquatic life in certain circumstances

### 12.2 Persistence and degradability

Not relevant, since cement is an inorganic material. After hardening, the concrete has no risk of toxicity.

### 12.3 Bioaccumulation potential

Not relevant, since cement is an inorganic material. After hardening, the concrete has no risk of toxicity.

### 12.4 Soil mobility

Dry cement is chemically stabile and not volatile. It may spread during handling under dust form.

### 12.5 Results of evaluations PBT and vPvB

Not applicable, because cement is an inorganic material. After hardening, cement presents no toxic risk.

### 12.6 Other adverse effects

Not applicable.

### 13. DISPOSAL CONSIDERATIONS

The cement and the packaging to be eventually disposed, must be handled in accordance with Part IV of the "Regulations on waste management" of the 152/2006 Legislative Decree "Regulations on the environment" and subsequent modifications and integrations and related implemented decrees.

### 14. TRANSPORT INFORMATION

The cement does not fall within any class of hazard for the transport of dangerous goods and is not subject to any relevant modal regulations: IMDG (sea), ADR (road), RID (rail), ICAO / IATA (air). Avoid wind dispersal during transport, by utilizing closed containers.

#### 14.1 ONU number

Not relevant.

#### 14.2 ONU sea shipping number

Not relevant.

#### 14.3 Hazard class connected with transport

Not relevant.

#### 14.4 Packing group

Not relevant.

#### 14.5 Environmental hazards

Not relevant.

#### 14.6 Special precautions for users

Not relevant.

#### 14.7 Transport of bulk material in accordance with Annex II of MARPOL73/78 and the IMSBC code

Pursuant to the provisions of the IMSBC Code for shipping solid cargo in bulk (Appendix C), adopted by the International Maritime Organization (IMO) with MSC 268 (85): 2008 Resolution and subsequent modifications and integrations, and acknowledged with the Managerial Decree of the Ministry of Infrastructures and Transports No. 1340 dated November 30<sup>th</sup>, 2010.

### 15. REGULATORY INFORMATION

#### 15.1 Mixture specific standards and legislation on health, safety and environment

- CE 18/12/2006 Regulation no. 1907 "Registration, evaluation, authorization, and restriction of the use of chemical substances" (REACH) and subsequent modifications and integrations.
- Regulation no. 1272/2008/CE on the classification, labelling, and packaging of substances and mixtures (CLP), with amendment and repeal of 67/548/CEE and 1999/45/CE Directives and 1907/2006/CE Regulation and subsequent modifications and integrations
- Regulation no. 453/2010/UE amending Regulation no. 1907/2006/CE, in regards to Annex II "Requirements for the compilation of safety data sheets (SDS)"
- Regulation no. 487/2013/UE amending , for technological and scientific progress adaptation purposes, Regulation (CE) no. 1272/2008 of the European Parliament and Council relating to the classification, labelling and packaging of substances and mixtures .
- Regulation no. 830/2015/UE dated May 28<sup>th</sup>, 2015 amending Regulation (CE) no. 1907/2006 of the European Parliament and Council on the registration, evaluation, authorization and restriction of chemicals (REACH)
- Decree of the Ministry of Health dated 10/05/2004 "Implementation of the 2003/53/CE directive, containing the twenty-sixth amendment to the 76/769/CEE Directive relating to restrictions on the marketing and use of certain dangerous substances and mixtures (nonylphenol, ethoxylated nonylphenol and cement)"

- Decree of the Ministry of Health dated February 17<sup>th</sup>, 2005 "Adoption of a test method for cement in relation to the DM dated 10<sup>th</sup> May 2004 that implemented the twenty-sixth amendment to the 76/769/CEE Directive"
- Legislative Decree no. 81 dated 9/04/2008 and subsequent modifications and integrations "Implementation of Article 1 of the law dated August 3<sup>rd</sup>, 2007, no. 123, concerning the protection of health and safety in the workplace".
- EN 196/10 - "Test methods for cement" – Part 10: Determination of the water-soluble chromium VI content of cement
- EN 197/1 – "Cement – Composition, specifications and conformity criteria for common cements"
- EN 15368 "Hydraulic binder for non-structural applications - Definition, specifications and conformity criteria"
- EN 413-1 "Masonry cement - Part 1: Composition, specifications and conformity criteria"
- EN 14216 "Cement - Composition, specifications and conformity criteria for very low heat special cements "
- Legislative Decree no. 152/2006 "Code on the Environment " and subsequent modifications and integrations

The 1907/2006/CE Regulation concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), Annex XVII, paragraph 47, as amended by Regulation No. 552/2009, prohibits the marketing and use of cement and its mixtures if they contain, when mixed with water, more than the 0.0002% (2 ppm) of water-soluble chromium VI of the total dry weight of the cement itself. Taking into account that common cement, when mixed with water, does not contain more than the 0,0002% (2ppm) of water-soluble Cr(VI) of its total dry weight, the mixture can be marketed without the use of any reducing agents.

Since cement is a mixture, it is not subject to the requirement of the REACH registration which applies to substances.

The cement clinker is a substance but it is exempted from the registration under art. 2.7 (b) and Annex V.10 of REACH, yet subject to a notification (Notification no. 02-2119682167-31-0000 – Updating of the notification dated 11/7/2013 –Report Presentation no. QJ420702-40).

## 15.2 Chemical Safety Assessment

No chemical safety assessment is necessary

## 16. OTHER INFORMATION

### 16.1 Indication of Amendments

This Safety Data Sheet has been completely amended and revised in order to acknowledge Regulation 1272/2006 "CLP" and Annex II of Regulation 453/2010 whose provisions have become effective since June 1<sup>st</sup>, 2015.

### 16.2 Abbreviations and acronyms

ACGIH: American Conference of Industrial Hygienists  
ADR/RID: Agreement on the transport of dangerous goods by road/Regulations on the international transport of dangerous goods by rail  
APF: Assigned Protection Factor  
CAS: Chemical Abstract Service  
CLP: Classification, Labelling and Packaging (Regulation 1272/2008)  
COPD: Chronic Obstructive Pulmonary Disease  
DDT: Transport Document  
DNEL: Derived no-effect level  
PPE: Personal Protection Equipment  
EC50: half maximal effective concentration  
ECHA: European Chemical Health Agency  
EPA: High efficiency air filters (particulates)  
FF P: Filtering Face piece against Particles (single-use)  
FM P: Filtering Mask against Particles with filter cartridge  
IATA: International Air Transport Association  
IMDG: International Maritime Dangerous Goods  
IMO: International Maritime Organization  
IMSBC: International Maritime Solid Bulk Cargoes  
LC50: Median lethal dose

MEASE: Metal Estimation and Assessment of Substance Exposure, EBRC Consulting GmbH for Eurometaux, <http://www.ebrc.de/industrial-chemicals-reach/projects-and-references/mease.php>

OEL: occupational exposure limit

PBT: Persistent, Bio-accumulative and Toxic

PNEC: Predicted no-effect concentration

PROC: Process Categories

RPE: Respiratory Protective Equipment

REACH: Registration, Evaluation, Authorization and Restriction of Chemicals

SDS: Safety Data Sheet

STOT: Specific Target Organs Toxicity

TLV-TWA: Threshold Limit Value-Time Weighted Averages

vPvB: very Persistent, very Bio-accumulative

### 16.3 Bibliography and information sources

- (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) Prospective monitoring of exposure and lung function among cement workers, Interim report of the study after the data collection of Phase I-II 2006-2010, Hilde Notø, Helge Kjuus, Marit Skogstad and Karl-Christian Nordby, National Institute of Occupational Health, Oslo, Norway, March 2010.
- (16) MEASE, Metals estimation and assessment of substance exposure, EBRC Consulting GmbH for Eurometaux.
- (17) Occurrence of allergic contact dermatitis caused by chromium in cement. A review of epidemiological investigations, Kåre Lenvik, Helge Kjuus, NIOH, Oslo, December 2011.

### 16.4 Training advice

In addition to training programs about the environment, health and safety for their workers, companies shall make sure that workers read, understand and follow the requirements of this Safety Data Sheet.

### 16.5 Further information

The data and test methods used for the classification of common cements are shown in Paragraph 11.1.

Classification and procedures adopted to obtain mixture classification accordingly to Regulation 1272/2008/UE (CLP) are listed in the Table below.

<b>Classification according to (CE) 1272/2008 Regulation</b>	<b>Classification procedure</b>
Skin irritation 2, H315	Based on tests data
Eye damages 1, H318	Based on tests data
Skin sensitization 1B, H317	Experience on man
STOT SE 3, H335	Experience on man

This Safety Data Sheet , as well as any subsequent amendments and reviews, are also available in electronic format at: [www.colacem.it](http://www.colacem.it)

#### **16.6 Disclaimer**

The information contained in this SDS is based on current available knowledge and we expect that the product is used according to the usage conditions given and in compliance with the indications provided on the packaging and /or technical documents . Any other use of the product, including the use of the product in association with other products or in other processes, is the responsibility of the user.

It is understood that the user is responsible for the safety measures specifically identified and the application of appropriate operating procedures concerning the prevention of risks in their own activities.