SAFETY DATA SHEET

CEMENT

According to the Regulation REACH (CE) n° 1907/2006 and the regulation (UE) nº 453/2010. According to "Guidelines for the safety data sheet template for common cements" 2020 by CEMBUREAU.

1. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Cement. *(CAS#65997-15-1)*

UFI: 5S10-Y05U-900A-XNYN
(CEM I 42,5 R, CEM I 42,5 N-SR5, CEM I 52,5 R, CEM I 52,5 R (ai), CEM I 52,5 R-SR 5)

UFI: E920-00A7-4009-XQGG
(CEM II/B-L 32,5 N, CEM II/A-L 42,5 R)

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

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

Common cements and cement containing mixtures (hydraulic binders) are used industrially, by professionals as well as by consumers in building and construction work, indoor and outdoor. The identified uses of cements and cement containing mixtures cover the dry products and the products in a wet suspension (paste). See section 16.2 for more information regarding use descriptors and categories.

For more information on categories and descriptors of use see section 16.2.

Any uses not mentioned above, are advised against.

1.3. Details of the supplier of the safety data sheet

Company name: Cementos Portland Valderrivas, S.A.

Monjos factory
Full address: Llano de la estación, s/n.
08730 Santa Margarida i Els Monjos.
(Barcelona)
Telephone: 93 898 39 00

Vallcarca factory
Full address: Ctra. M-311Ctra. C-31, Km. 168,5.
08872 Vallcarca-Sitges
(Barcelona)
Telephone: 93 894 95 68

Contact telephone number in central offices: 91 396 01 00
E-mail address of the competent person responsible for the SDS: consultas_web@gcpv.com
Contact: http://www.valderrivas.es

1.4. Emergency telephone number

Call the medical emergency telephone number of your location or the universal emergency telephone number 112 and tell the operator the details of this data sheet.

2. Hazards identification

2.1. Classification of the substance or mixture

According to Regulation (EC) No 1272/2008 (CLP*) the mixture is classified:*

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

2.2. Label elements

According to Directive (CE) nº 1272/2008 (CLP)

Hazard pictograms

Signal word
Danger

Hazard *statements*

H318 Causes serious eye damage.
H315 Causes skin irritation.
H335 May cause respiratory irritation.

Precautionary statements

P102 Keep out of reach of children.
P280 Wear protective gloves / protective clothing / eye protection / face protection.
P501 Dispose of contents / container to a suitable point waste collection.

P305+P351+P338+P310 *If in eyes:* Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a 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 / spray.
If inhaled: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a doctor/physician if you feel unwell.

Supplemental information

Skin contact with wet cement, fresh concrete or mortar, may cause irritation, dermatitis or burns.

May cause damage to products made of aluminium or other non-noble metals.

The cement contains, when required, reducing agents for chromium (VI), which determines a content of soluble chromium (VI) below 0,0002%, verified according to Normative UNE EN 196-10 to ensure compliance with OM PRE/1954/2004, and the Regulation (EC) nº 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and restriction of chemicals (REACH) as regards Annex XVII

• Your effective period declared is:

- Bags: Two months from the date shown on the packaging (storage conditions: closed bags in a cool, still air and soil isolated.
- Bulk: A month after the issuance of the receipt. In any case, it is limited to the first manipulation by the user cement (cement is stored in closed silo).

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).

Cement is either naturally low in soluble chromium VI or reducing agents have been added to control the levels of sensitizing soluble chromium (VI) to below 2 mg/kg (0,0002%) of the total dry weight of the cement ready for use according to legislation specified under Section 15.
If the storage conditions are not suitable or if the period of effectiveness declared in the supplementary information in section 2.2. is exceeded, the effectiveness of the reducing agent may decrease and the cement could be sensitizing to the skin (H317).

3. Composition / Information on components

3.1. Substances

Not applicable because the product is a mixture, not a substance.

3.2. Mixtures

Cement consists of clinker, gypsum and mass additives in different proportions according to the type of cement, according to the chart below. Chart for Normative UNE-EN 197-1:2011 / UNE 80303-1:2013 / UNE80303-2:2011 / UNE 80305:2011 / UNE 80307:2001 / UNE-EN 14.216:2005 / UNE-EN 413-1:2011.

Type	Substances		Composition (proportion in mass)[a]										
			Main Components										Minor Components
			Clinker	Blast furnace stag	Silica fume	Pozzolana		Fly ash		Calcined shale	Limestone		
						Natural	Natural calcined	Siliceous	Calcined				
			K	S	D [b]	P	Q	V	W	T	L	LL	
CEM I	Portland Cement	CEM I	95-100	-	-	-	-	-	-	-	-	-	0-5
CEM II	Portland Cement blast furnace slag	CEM II/A-S	80-94	6-20	-	-	-	-	-	-	-	-	0-5
		CEM II/B-S	65-79	21-35	-	-	-	-	-	-	-	-	0-5
	Portland Cement with silica fume	CEM II/A-D	90-94	-	6-10	-	-	-	-	-	-	-	0-5
	Portland Cement with pozzolan	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
		CEM II/B-Q	65-79	-	-	-	21-35	-	-	-	-	-	0-5
	Portland Cement with fly ash	CEMII/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
		CEM II/B-W	65-79	-	-	-	-	-	21-35	-	-	-	0-5
	Portland Cement with calcined shale	CEM II/A-T	80-94	-	-	-	-	-	-	6-20	-	-	0-5
		CEM II/B-T	65-79	-	-	-	-	-	-	21-35	-	-	0-5
	Portland Cement with limestone	CEM II/A-L	80-94	-	-	-	-	-	-	-	6-20	-	0-5
		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

	Composite Portland Cement [c]	CEM II/A-M	80-*88*	<---------- *16-20* ---------->									*0-5*
		CEM II/B-M	65-79	<---------- *21 -35* ---------->									*0-5*
CEM III	Portland Cement blast furnace slag	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 IV	Pozzolan Cement [c]	CEM IV/A	65-89	-	<---------- 11-35 ---------->					-	-	-	0-5
		CEM IV/B	45-64	-	<---------- 36-55 ---------->					-	-	-	0-5
CEM V	Composit Cement [c]	CEMV/A	40-64	18-30	-	<---------- 18-30 ---------->			-	-	-	-	0-5
		CEMV/B	20-38	31-49	-	<---------- 31-49 ---------->			-	-	-	-	0-5

a. The values in the table refer to the sum of the additional principal and minority components, *without gypsum, which is usually in a 3-6 % percentage in the total product.*

b. The proportion of Silica fume is limited to 10%

c. In Portland cement compound CEM II/A-M and CEM II/B-M, in the cement Pozzolanic to CEM IV/A and CEM IV/B and in composite cements CEM V/A and CEM V/B, the main components of the clinker must declare in the designation of cement.

Type	Substances		Composition (proportion in mass)											
			Main Components											Minor Components
			Clinker	Blast furnace stag	Silica fume	Pozzolana		Fly ash		Calcined shale	Limestone			
						Natural	Natural calcined	Siliceous	Calcined					
			K	S	D [b]	P	Q	V	W	T	L	LL		
ESP VI-1	Cement for special applications	ESP VI-1	25-55	*(Only S, P and V can be used)* 45-75 P< 40 %										0-5
VLH	Very low heat of hydration cement	VLH III/B	20-34	66-80	-	-	-	-	-	-	-	-		0-5
		VLH III/C	5-19	81-95	-	-	-	-	-	-	-	-		0-5
		VLH IV/A	65-89	-	<----------11-35 ---------->					-	-	-		0-5
		VLH IV/B	45-64	-	<---------- 36 - 55 ---------->					-	-	-		0-5
		VLH V/A	40-64	18-30	-	<---------- 18-30 ---------->				-	-	-		0-5
		VLH V/B	20-38	31-49	-	<---------- 31-*49* ---------->				-	-	-		0-5
MC	Brickwork cement	MC	≥ 25 (MC5) ≥ 40	<75 (including L, LL, other minor components) <60 (including L, LL, other minor components)										

Main Types	Description of the seven products (types of common sulfate-resistant cement) [b]		Composition (proportion in mass [a])				
			Main components				Additional minor components
			Clinker K	Blast furnace stag S	Natural Puzzolan P	Fly ash silica V	
CEM I	Sulphate-resistant Portland cement	CEM I-SR 0 CEM I-SR 3 CEM I-SR 5	95-100	-	-	-	0-5
CEM III	Blast furnace sulphate resistant cement	CEM III/B-SR	20-34	66-80	-	-	0-5
		CEM III/C-SR	5-19	81-95	-	-	0-5
CEM IV	Puzzolan sulphate resistant cement	CEM IV/A-SR	65-79	-	<----------21-35---------->		0-5
		CEM IV/B-SR	45-64	-	<----------36-55---------->		0-5

a. The values in the table refer to the sum of the additional principal and minority components.
b. In the cement Pozzolanic resistant to sulphates CEM IV/A-SR and CEM IV/B-SR different clinker main components should be reported on the designation of cement.

The additives can be:

- fly ash (No. C.A.S. 68131-74-8), limestone, slag (No. C.A.S. 65996-69-2), pozzolan or silica fume.
- Also it contains calcium sulfate, mainly as gypsum (No. C.A.S. 10101-41-4) or anhydrite (No. C.A.S. 7778-18-9).
- It could also contain ferrous sulfate (No C.A.S 7720-78-7 (anhydrous) and/or stannous sulfate (No. C.A.S 7488-55-3).

3.2.1. Components that are hazardous for the health of the environment

Substance	Percentage of concentration (p/p in cement)	Number of registration	EINECS	CAS	Regulation of Classification1272/2008	
					Type of hazard, category	Degree of hazardness
Clinker of Portland Cement	*5-100%*	*Not applicable*	*266-043-4*	*65997-15-1*	*STOT SE, Irritating to respiratory system cat 3*	*H335: may irritate respiratory system*
					Irritating to skin (category 2)	*H315: produces skin irritation*
					Serious damage to eyes / Eye irritation (category 1)	*H318: produces serious eye irritation*
					Sensitization of skin (category 1)	*H317: may produce an allergic skin reaction*
Clinker of Portland Cement Dust [1]	*0-5%*	*01-2119486767-17-0020*	*270-659-9*	*68475-76-3*	*STOT SE, Irritating to respiratory system cat 3*	*H335: may irritate respiratory system*
					Irritating to skin (category 2)	*H315: produces skin irritation*
					Serious damage to eyes / Eye irritation (category 1)	*H318: produces serious eye irritation*
					Sensitization of skin (category 1)	*H317: may produce an allergic skin reaction*

4. First aid measures

4.1. Description of first aid measures

General notes.

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

Following contact with eyes.

Do not rub eyes in order to avoid possible cornea damage as a result of mechanical stress. Remove contact lenses if any. Incline head to injured eye, open the eyelid(s) widely and flush eye (s) immediately by thoroughly rinsing wig plenty of clean water for at least 20 minutes to remove all particles. Avoid flushing particles into injured eye. If possible, use isotonic water (0,9% NaCl).

Contact a specialist of occupational medicine or an eye specialist.

Following skin contact

For dry cement, remove and rinse abundantly with water.

For wet cement, wash skin with plenty of water.

Remove contaminating clothing, footwear, watches, etc. and clean thoroughly before re-using them.

Seek medical treatment in all cases of irritation or burns.

Following inhalation

Move the person to fresh air. Dust in throat and nasal passages should clear spontaneously.

Contact a physician if irritation persists or later develops or if discomfort, coughing or other symptoms persist.

Following ingestion

Do not induce vomiting. If the person is conscious, wash out mouth with water and give plenty of water to drink.

Get immediate medical attention.

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

Eyes:

Eye contact with cement (dry or wet) may cause serious and potentially irreversible injuries.

Skin:

Cement may have an irritating effect on moist skin (due to sweat or humidity) after prolonged contact or may cause contact dermatitis after repeated contact.

Prolonged skin contact, without well protection, with wet cement or wet concrete may cause severe burns as they develop painlessly (for example kneeling on fresh concrete, even wearing pants).

For more details see Reference (1). (Section 16.3. Of this document)

Inhalation:

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

Environment:

Under normal use, common cement is not hazardous to the environment.

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

When contacting a physician, take this Safety Data Sheet with you.

5. Fire-fighting measures

5.1. Extinguishing media

Common cements are not flammable.

5.2. Special hazards arising from the substance or mixture

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

5.3. Advice for fire-fighters

Cement poses no fire-related hazards.

No need for special protective equipment for fire fighters.

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 level.

6.2. Environmental precautions

Do not wash cement down sewage and drainage systems or into bodies of water (for example, streams).

6.3. Methods and material for containment and cleaning up

Collect the spilled material and reuse it.

Dry cement:

Use clean-up methods such as vacuum clean-up or vacuum extraction (industrial portable units, equipped with high efficiency air filters (EPA and HEPA, UNE-EN 1822-1:2010) or equivalent technique). Never use compressed air.

Alternatively, wipe-up the dust mopping, wet brushing or by using water sprays or hoses (fine mist to avoid that the dust becomes airborne) and remove slurry.

If not possible, remove by slurrying with water (see wet cement).

When wet or vacuum cleaning cannot be used and *only removal with utensils* is applicable, it is necessary to ensure that all workers wear the appropriate protective equipment and prevent the dispersion of dust *through the use of suitable utensils, avoiding sweeping with brush.*

Avoid inhalation of cement and contact with skin.

Place spilled materials into a container.

Solidify before disposal as described under Section 13.

Wet cement:

Clean up wet cement and place in an appropriate container.

Allow material to dry and solidify before disposal as described under Section 13.

6.4. Reference to other sections

See sections 8 and 13 for more details.

7. Handling and storage

7.1. Precautions for safe handling

7.1.1. Protective measures

Follow the recommendations as given under Section 8.

To clean up dry cement, see Subsection 6.3.

Measures to prevent fire:

Not applicable.

Measures to prevent aerosol and dust generation:

Do not sweep. Use dry cleanup methods such as vacuum clean-up or vacuum extraction, which do not cause airborne dispersion.

For more information consult the "guide of good practices" adopted by the European Social Dialogue Agreement "Agreement on the protection of workers' health for the proper handling and proper use of crystalline silica and products containing it" by European trade unions and business associations, among which is Cembureau. These recommendations can be found on safe handling http://www.nepsi.eu/good-practice-guide.aspx.,
The Spanish cement industry voluntarily adopted the terms of the Agreement *and participates in its monitoring and evaluation of objectives.*

Measures to protect the environment:

No particular measures.

7.1.2. Information on general occupational hygiene

Do not handle or store near food and beverages or smoking materials.

In dusty environment wear dust mask and protective goggles.

Use protective gloves to avoid skin contact.

7.2. Conditions for safe storage, including any incompatibilities

Bulk cement should be stored in silos that are waterproof, dry (i.e. with internal condensation minimized), clean and protected from contamination.

Engulfment danger: Cement can build-up or adhere to the walls of a confined space. The cement can release, collapse or fall unexpectedly. To prevent engulfment or suffocation, do not enter a confined space, such as a silo, bin, bulk truck, or other storage container or vessel that stores or contains cement without taking the proper security measures.

Packed products should be stored in unopened bags clear of the ground in cool, dry conditions and protected from excessive draught in order to avoid degradation of quality.

Bags should be stacked in a stable manner.

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

7.3. Specific end use(s)

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

7.4. Control of soluble Cr (VI)

For cements treated with a Cr (VI) reducing agent according to the regulations given in Section 15, the effectiveness of the reducing agent diminishes with time. Therefore, cement bags and/or delivery documents will contain information on the packaging date, the storage conditions and the storage period appropriate to maintaining the activity of the reducing agent and to keeping the content of soluble chromium VI below 0,0002% of the total dry weight of the cement ready for use, according to UNE EN 196-10. They will also indicate the appropriate storage conditions for maintaining the effectiveness of the reducing agent.

This information can be consulted in section 2.2. (Supplementary information) and 7.2.

8. Exposure controls/personal protection

8.1. Control parameters

Name-limit value	Type of limit value	Value (at 8 h TWA)	Units	Legal references
Dust (insoluble or little soluble)	VLA-ED Inhalable faction	10	mg/m³	"Lista de Exposición Profesional para agentes Químicos de España" del INSHT
Dust (insoluble or little soluble)	VLA-ED Respirable fraction	3	mg/m³	ORDEN itc/2585/2007 "Lista de Exposición Profesional para agentes químicos de España" del INSHT.
Portland cement	VLA-ED Inhalable faction	4	mg/m³	"Lista de Exposición Profesional para agentes químicos de España" del INSHT.
Crystalline silica	VLA-ED Respirable fraction	0,1	mg/m³	Maximum Exposure Limit at the European Union level according to "Directive (EU) 2017/2398" The applicable limit in Spain will be the one that appears in Royal Decree 665/1997

8.2. Exposure controls

Engineering controls and individual protective measures listed in this section take into account a DNEL 3 mg / m³. The DNEL refers to respirable dust. In contrast, the tool used to make risk assessments (MEASE) works with the inhalable fraction. Therefore, the results of the risk assessment and management measures derived for intrinsically carry an additional margin of safety.

8.2.1. Appropriate engineering controls

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

Exposure scenario	PROC*	Exposure	Localized controls	Efficiency
Industrial manufacture/formulation of hydraulic building and construction materials	2, 3	Duration is not restricted (up to 480 minutes per shift, 5 shifts a week)	not required	-
	14, 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 uses of dry hydraulic building and construction 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 uses of wet suspension of hydraulic building and construction materials	7		A) not required or B) Generic local exhaust ventilation	- 78 %
	2, 5, 8b, 9, 10, 13,14		not required	-
Professional use of dry hydraulic building and construction material (indoor, outdoor)	2	Duration is not restricted (up to 480 minutes per shift, 5 shifts a week)	not required	-
	9, 26		A) not required or B) Generic local exhaust ventilation	- 78 %
	5, 8a, 8b, 14		A) not required or B) Generic local exhaust ventilation	- 87 %
	19		Localized controls are not applicable, process only in good ventilated rooms or outdoor	50 %
Professional uses of wet suspensions of hydraulic building and construction materials	11		A) not required or B) Generic local exhaust ventilation	- 78 %
	2, 5, 8a, 8b, 9, 10, 13, 14, 19		not required	-

** PROC´s are identified uses and defined in section 1.2.*

[For each individual PROC, companies can choose option A) or B) included in the above table according to their particular situation best suited. When an option is chosen, you must choose the same table included in section 8.2.2. "Individual protection measures, such as personal protective equipment" a chosen option. - Specification of respiratory protective equipment]

8.2.2. Individual protection measures such as personal protection equipment

General:

During work avoid kneeling in fresh mortar or concrete wherever possible. If kneeling is absolutely necessary then appropriate waterproof personal protective equipment must be worn (waterproof knee).

Do not eat, drink or smoke when working with cement to avoid contact with skin or mouth.

Immediately after working with cement or cement-containing materials, workers should wash or shower or use skin moisturizers.

Remove contaminated clothing (footwear, watches, etc.) and clean thoroughly before reusing them.

Eye/face protection:

Wear approved glasses or safety goggles according to EN standard when handling dry or wet cement to prevent contact with eyes.

Skin protection:

Wear waterproof, abrasion and alkali resistant gloves (for example, gloves with a special nitrile outer coating and cotton inside), safety shoes, long-sleeved protective clothing, as well as skin care products (including protective creams) to protect the skin from prolonged contact with wet cement. Special care must be taken to prevent (wet) cement from entering safety footwear. For gloves, respect the maximum time of use to avoid skin problems. Available studies show that nitrile impregnated cotton gloves (approximately 0.15 mm thick) provide sufficient protection for 480 minutes, under normal wear and tear (which may vary depending on the task) . It is recommended to keep spare gloves available in case those in use are damaged.

In some circumstances, such as when laying concrete or screed, waterproof trousers or kneepads are necessary.

Respiratory protection:

When a person is potentially exposed to dust levels above exposure limits, use appropriate respiratory protection. The type of respiratory protection should be adapted to the dust level and conform to the relevant EN standard, (for example UNE EN 149) or another national standard.

Thermal hazards:

Not applicable.

Exposure Scenario	PROC*	Exposure	Specification of respiratory protective equipment (RPE)	RPE Efficiency assigned protection factor (APF)
Industrial manufacture/formulation of hydraulic building and construction materials	2, 3	Duration is not restricted (up to 480 minutes per shift, 5 shifts a week)	Not required	-
	14,26		A) P1 mask (FF, FM) or B) Not required	FPA = 4 -
	5, 8b, 9		A) P2 mask (FF, FM) or B) P1 mask (FF, FM)	FPA = 10 FPA = 4
Industrial uses of dry hydraulic building and construction materials (indoor, outdoor)	2		Not required	-
	14, 22, 26		A) P1 mask (FF, FM) or B) not required	FPA = 4 -
	5, 8b, 9		A) P2 mask (FF, FM) or B) P1 mask (FF, FM)	FPA = 10 FPA = 4
Industrial uses of wet suspension of hydraulic building and construction Materials	7		A) P1 mask (FF, FM) or B) not required	FPA = 4 -
	2, 5, 8b, 9, 10, 13, 14		Not required	-
Professional use of dry hydraulic building and construction material (indoor, outdoor)	2		P1 mask (FF, FM)	FPA = 4
	9, 26		A) P2 mask (FF, FM) or B) P1 mask (FF, FM)	FPA = 10 FPA = 4
	5, 8a, 8b, 14		A) P3 mask (FF, FM) or B) P1 mask (FF, FM)	FPA = 20 FPA = 4
	19		P2 mask (FF, FM)	FPA = 10
Professional uses of wet suspensions of hydraulic building and construction materials	11		A) P2 mask (FF, FM) or B) P1 mask (FF, FM)	FPA = 10 FPA = 4
	2, 5, 8a, 8b, 9, 10, 13, 14, 19		Not required	-

PROC´s are identified uses and defined in section 1.2.

[For each individual PROC, *users must choose option A) or B) in the table above, according to what was chosen in section "8.2.1 Appropriate engineering controls" – localized controls.*]

An overview of the APFs of different RPE (according to EN 529:2006) can be found in the glossary of MEASE (16).

Any RPE as defined above shall only be worn if the following principles are implemented in parallel: The duration of work (compare with "duration of exposure" above) should reflect the additional physiological stress for the worker due to the breathing resistance and mass of the RPE itself, due to the increased thermal stress by enclosing the head. In addition, it shall be considered that the worker's capability of using tools and of communicating are reduced during the wearing of RPE.

For reasons as given above, the worker should therefore be (i) healthy (especially in view of medical problems that may affect the use of RPE), (ii) have suitable facial characteristics reducing leakages between face and mask (in view of scars and facial hair). The recommended devices above which rely on a tight face seal will not provide the required protection unless they fit the contours of the face properly and securely.

The employer and self-employed persons have legal responsibilities for the maintenance and issue of respiratory protective devices and the management of their correct use in the workplace. Therefore, they should define and document a suitable policy for a respiratory protective device program including training of the workers.

8.2.3. Environmental exposure controls

Air: Environmental exposure control for the emission of cement particles into air has to be in accordance with the available technology and regulations for the emission of general dust particles.

Water: Do not pour cement or sewage systems or surface waters to avoid raising the pH.
A pH greater than 9 may cause adverse ecotoxicological impacts.

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

For more information, see section 6 "Accidental release measures".

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

This information applies to the whole mixture.

a) *Physical state:* Dry cement is a finely ground solid inorganic material. General granulometry: 5-30 µm.
b) *Color: grey or white*
c) Odor: odorless
d) Melting point: > 1250 ºC
e) Initial boiling point and boiling range: not applicable as under normal atmospheric conditions, melting point >1250 ºC.
f) Flammability (solid, gas): not applicable as is a solid which is noncombustible and does not cause or contribute to fire through friction.
g) Upper/lower flammability or explosive limits: not applicable as is not a flammable gas.
h) Flash point: not applicable as is not a liquid.
i) Auto-ignition temperature: not applicable (no phyrophoricity – no organo-metallic, organo-metalloid or organo-phosphine bindings or of their derivatives, and no other pyrophoric constituent in the composition).
j) Decomposition temperature: not applicable as no organic peroxide present
k) pH: (T^a = 20 °C; in water, water-solid ratio 1:2): basic in between 11 y 13,5
l) Viscosity: not applicable as not a liquid
m) Solubility(ies) in water: (T 20 ºC): slight (0.1-1.5 g/l)
n) Partition coefficient n-octanol / water: not applicable as it is an inorganic mixture
o) Vapor pressure: not applicable as melting point >1250 ºC.
p) Relative density: 2,75 - 3,20 g/cm3 a 20 °C; apparent density 0,9-1,5 g/cm3 a 20 °C
q) Relative vapor density: not applicable as it is a solid substance.
r) Characteristics of the particles. Typical particle size: 5-30 µm

9.2. Other information

Not applicable.

10. Stability and reactivity

10.1. Reactivity

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

10.2. Chemical stability

Dry cements are stable as long as they are properly stored (see Section 7) and compatible with most other building materials. They should be kept dry.

Contact with incompatible materials should be avoided.

Wet cement is alkaline and incompatible with acids, with ammonium salts, with aluminum or other non-stable metals. Cement dissolves in hydrofluoric acid to produce corrosive silicon tetrafluoride gas.

Cement reacts with water to form silicates and calcium hydroxide. Silicates in cement react with powerful oxidizers such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride.

10.3. Possibility of hazardous reactions

Cements do not cause hazardous reactions.

10.4. Conditions to avoid

Humid conditions during storage may cause lump formation and loss of product quality.

10.5. Incompatible materials

Acids, ammonium salts, aluminum or other non-noble metals. Uncontrolled use of aluminum powder in wet cement should be avoided as hydrogen is produced.

10.6. Hazardous decomposition products

Cement will not decompose into any hazardous products.

11. Toxicological information

11.1. Information on toxicological effects

Hazard class	Cat	Effect	Reference
Acute toxicity – Dermal	-	Limit test, rabbit, 24 hours contact, 2.000 mg/kg body weight – no lethality. Based on available data, the classification criteria are not met.	(2)
Acute toxicity – Inhalation	-	No acute toxicity by inhalation observed. Based on available data, the classification criteria are not met.	(9)
Acute toxicity – oral	-	No indication of oral toxicity from studies with cement kiln dust. Based on available data, the classification criteria are not met.	Literature Survey

Skin corrosion/irritation	2	Cement in contact with wet skin may cause thickening, cracking or fissuring of the skin. Prolonged contact in combination with abrasion may cause severe burns.	(2) Human Experience
Serious eye damage/irritation	1	Portland cement clinker caused a mixed picture of corneal effects and the calculated irritation index was 128. Common cements contain varying quantities of Portland cement clinker, fly ash, blast furnace slag, gypsum, natural pozzolans, burnt shale, silica fume and limestone. Direct contact with cement may cause corneal damage by mechanical stress, immediate or delayed irritation or inflammation. Direct contact by larger amounts of dry cement or splashes of wet cement may cause effects ranging from moderate eye irritation (for example conjunctivitis or blepharitis) to chemical burns and blindness.	(10), (11)
Skin sensitization	-	Some individuals develop eczema upon exposure to wet cement dust, caused either by the high pH which induces irritant contact dermatitis after prolonged contact, or by an immunological reaction to soluble Cr (VI) which elicits allergic contact dermatitis. The response may appear in a variety of forms ranging from a mild rash to severe dermatitis and is a combination of the two above mentioned mechanisms. If the cement contains a soluble Cr (VI) reducing agent and as long as the mentioned period of effectiveness of the chromate reduction is not exceeded, a sensitizing effect is not expected to chromate (Reference 3). *Therefore, and according to the query published by ECHA, its classification is not considered appropriate.*	(3), (4), (17), *(18)*
Respiratory Sensitization	-	There is no indication of sensitization of the respiratory system. Based on available data, the classification criteria are not met.	(1)
Germ cell Mutagenity	-	No indication. Based on available data, the classification criteria are not met.	(12), (13)
Carcinogenicity	-	No casual association has been established between Portland cement exposure and cancer. The epidemiological literature does not support the designation of Portland cement as a suspected human carcinogen. Portland cement is not classifiable as a human carcinogen (according to ACGIH A4: Agents that cause concern that they could be carcinogenic for humans but which cannot be assessed conclusively because of a lack of data. In vitro or animal studies do not provide indications of carcinogenicity that are sufficient to classify the agent with one of the other notations). Based on available data, the classification criteria are not met.	(1) (14)
Reproductive Toxicity	-	Based on available data, the classification criteria are not met.	No evidence from human experience
STOT – single Exposure	3	Cement dust may irritate the throat and respiratory tract. Coughing, sneezing, and shortness of breath may occur following exposures in excess of occupational exposure limits. Overall, the pattern of evidence clearly indicates that occupational exposure to cement dust has produced deficits in respiratory function. However, evidence available at the present time is insufficient to establish with any confidence the dose response relationship for these effects.	(1)

STOT – repeated Exposure	-	*Long-term exposure to respirable cement dust above the exposure limit values can cause coughing, choking, and chronic obstructive changes in the respiratory tract. Chronic effects have not been observed at low concentrations.* Based on available data, the classification criteria are not met.	(15)
Aspiration hazard	-	Not applicable as cements are not used as an aerosol.	

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

Medical conditions aggravated by exposure

Inhaling cement dust may aggravate existing respiratory system disease(s) and/or medical conditions such as emphysema or asthma and/or existing skin and/or eye conditions.

11.2 Information on other hazards

11.2.1. Endocrine disrupting properties

Not relevant.

12. Ecological information

12.1. Toxicity

The product is not hazardous to the environment. Ecotoxicological test with Portland cement on Daphnia magna (Reference (5)) and Selenastrum coli (Reference (6)) have shown little toxicological impact. Therefore LC50 and EC50 values could not be determined (Reference (7)). There is no indication of sediment phase toxicity (Reference (8)). The addition of large amounts of cement to water may, however, cause a rise in pH and may, therefore, be toxic to aquatic life under certain circumstances.

12.2. Persistence and degradability

Not relevant as cement is an inorganic material.

After hardening, cement presents no toxicity risks.

12.3. Bioaccumulative potential

Not relevant as cement is an inorganic material.

After hardening, cement presents no toxicity risks.

12.4. Mobility in soil

Not relevant as cement is an inorganic material.

After hardening, cement presents no toxicity risks.

12.5. Results of PBT and vPvB assessment

Not relevant as cement is an inorganic material.

After hardening, cement presents no toxicity risks.

12.6. Endocrine disrupting properties

Not relevant.

12.7. Other adverse effects

Not relevant.

13. Disposal considerations

13.1. Waste treatment methods

Do not dispose of into sewage systems or surface waters.

Product – cement with a chrome reducer that has exceed its efficiency period (and when demonstrated that it contains more than 0,0002% soluble Cr(VI)):

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

Shall not be used/sold other than for use in controlled closed and totally automated processes or should be recycled or disposed of according to local legislation or treated again with a reducing agent.

Product – unused residue or dry spillage

EWC entries: 10 13 06 (particles and dust)

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

Product – slurries

Allow to harden, avoid entry in sewage and drainage systems or into bodies of water (for example streams) and dispose of as explained below under “Product – after addition of water, hardened”.

Product – after addition of water, hardened

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

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

Packaging

EWC entry: 15 01 01 or 15 01 05 (waste paper and cardboard packaging).

Completely empty the packaging and process it according to local legislation.

14. Transport information

Cement is not covered by the international regulation on the transport of dangerous goods (IMDG, IATA, ADR/RID). Not dangerous goods according to transport regulation.

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

14.1. UN number *or ID number*

Not relevant.

14.2. UN proper shipping name

Not relevant.

14.3. Transport hazard class(es)

Not relevant.

14.4. Packing group

Not relevant.

14.5. Environmental hazards

Not relevant.

14.6. Special precautions for user

Not relevant.

14.7. Transport in bulk *according to IMO*

Not relevant.

15. Regulatory information

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

Cement is a mixture according to REACH and is not subject to registration. Cement clinker is exempt from registration (Art. 2.7 (b) and Annex V.10 of REACH).

The marketing and use of cement is subject to a restriction on the content of soluble Cr (IV) (REACH Annex XVII point 47 Chromium VI compounds and Orden PRE/1954/2004[2]):

1. “Cement and cement containing mixtures shall not be placed on the market, or used, if they contain, when hydrated, more than 2 mg/kg (0,0002%) soluble chromium VI of the total dry weight of the cement.”

2. “If reducing agents are used, then without prejudice to the application of other Community provisions on the classification, packaging and labeling of substances and mixtures, suppliers shall ensure before the placing on the market that the packaging of cement or cement-containing mixtures is visibly, legibly and indelibly marked with information on the packing date, as well as on the storage conditions and the storage period appropriate to maintaining the activity of the reducing agent and to keeping the content of soluble chromium VI below the limit indicated in paragraph 1.”

3. “By way of derogation, paragraphs 1 and 2 shall not apply to the placing on the market for, and use in, controlled closed and totally automated processes in which cement and cement-containing mixtures are handled solely by machines and in which there is no possibility of contact with the skin.”

4. The standard adopted by the European Committee for Standardization (CEN) to carry out tests on the content of water-soluble chromium (VI) in cement or in the mixture that contains it will be used as the test method to accredit compliance with point 1.

State regulatory information

The commercialization of cement is subject to restrictions on the content of Cr (VI) contained in Order PRE / 1954/2004, equivalent to those specified in the REACH Regulation mentioned in the previous section.

Information in accordance with article 41 of the Law on Prevention of Occupational Risks.
In compliance with article 41 of Law 31/1995 on Occupational Risk Prevention, "Obligations of manufacturers, importers and suppliers", it is reported that the product may contain traces or impurities of crystalline silica (fine fraction), as well as traces (impurities) of hexavalent chromium and nickel. The possible contents of these substances are lower than the requirements for the classification of this product, in accordance with Regulation (EC) No. 1272/2008 and for the necessary information in section 3 of this Safety Data Sheet, in accordance with Regulation (EC) No. 1907/2006. Work that involves exposure to respirable crystalline silica dust generated in a work process, as well as hexavalent chromium and nickel substances, are included in different sections of Directive 2004/37 / EC, as amended by Directive (EU) 2017 / 2398, and consequently, they will be included in Royal Decree 665/1997. For this reason, where appropriate, the appropriate preventive measures must be adopted.

15.2. Chemical Safety Assessment

No chemical safety assessment has been carried out.

16. Other information

16.1. Indication of changes

In the previous version 3.3, a last paragraph was included at the end of section 15.1 (Regulatory information, in terms of safety, health and environment), related to carcinogens, from the perspective of a broad and strict interpretation of the state regulations to this respect. In addition, a small update was made to the reference to NEPSI (update of references or NEPSI website).

In the current version 4.0, the UFI numbers of unique identification of the products have been included once notified in the INTCF. In addition, a change has been made in the classification of the mixture according to criteria published by ECHA. Sections 2.1, 2.2., 2.3, 11., a change has been made in the control parameters derived from new community regulations. Section 8.1., Modified the information in section 15.1. State regulatory information and changed the titles of some sections and their content to comply with Commission Regulation (EU) 2020/878.

All changes can be identified by their blue italic font and the vertical marking in the margin.

16.2. Identified uses and descriptors and categories of use

The table below provides a summary of all relevant identified uses for cement or cement containing mixtures (hydraulic binders) All uses have been grouped into these identified uses due to specific exposure conditions for human health and the environment. For each of the uses, a series of risk management measures or localized controls have been proposed (see section 8) that need to be put into practice by the user of cement or the mixtures that contain it (hydraulic binders) to reach a level acceptable exposure.

Category of Process (PROC)	Identified Uses- Use Description	Manufacture/ /Formulation of	Professional/ /Industrial use of
		Building and construction materials	
2	Use in closed, continuous process, with sporadic controlled exposures.	X	X
3	Use in closed batch process / dosification.	X	X
5	Mixing or blending in batch process for formulation of preparations and articles	X	X
7	Industrial spraying		X

8a	Transfer of substance or preparation from/to vessels/large container at non dedicated facilities.		X
8b	Transfer of substance or preparation from/to vessels/large containers at dedicated facilities.	X	X
9	Transfer of substance or preparation into small containers.	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 tabletting, compression extrusion, pelletisation.	X	X
19	Hand mixing with intimate contact and only 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

16.3. Abbreviations and acronyms

ADR/RID	European Agreements on the transport of Dangerous goods by Road/Railway
CAS	Chemical Abstracts Service
CLP	Classification, labeling and packaging (Regulation (EC), number 1272/2008)
COPD	Chronic Obstructive Pulmonary Disease
DNEL	Derived no-effect level
EC50	Half Maximal effective concentration
ECHA	European CHemicals Agency
EINECS	European Inventory of Existing Commercial chemical Substances
EPA	Type of high efficiency air filter
ES	Exposure scenario
EWC	European Waste Catalogue
FF P	Filtering facepiece against particles (disposable)
FM P	Filtering mask against particles with filter cartridge
HEPA	Type of high efficiency air filter
H&S	Health and Safety
IATA	International Air Transport Association
IMDG	International agreement on the Maritime transport of Dangerous Goods LC50 Median lethal dose
MEASE	Metals estimation and assessment of substance exposure, EBRC Consulting GmbH for Eurometaux, http://www.ebrc.de/ebrc/ebrc-mease.php
MS	Member State
OELV	Occupational exposure limit value
PBT	Persistent, bio-accumulative and toxic
PNEC	Predicted no-effect concentration
PROC	Process category
RE	Repeated exposure
REACH	Registration, Evaluation and Authorization of Chemicals
RPE	Respiratory protective equipment
SCOEL	Scientific Committee on Occupational Exposure Limit Values
SDS	Safety Data Sheet
SE	Single exposure
STP	Sewage treatment plant
STOT	Specific Target Organ Toxicity
TLV-TWA	Threshold Limit Value-Time-Weighted Average

VLE-MP	Exposure limit value-weighted average in mg by cubic meter of air
vPvB	Very persistent, very bio-accumulative
w/w	Weight by weight
WWTP	Waste water treatment plant

16.*4*. Key literature references and sources of data

1) Portland Cement Dust - Hazard assessment document EH75/7, UK Health and Safety Executive, 2006. Available from: http://www. hse.gov.uk/pubns/web/portlandcement.pdf
2) Observations on the effects of skin irritation caused by cement, Kietzman et al, Dermatosen, 47, 5, 184-189 (1999).
3) European Commission's Scientific Committee on Toxicology, Ecotoxicology and the Environment (SCTEE) opinion of the risks to health from Cr (VI) in cement (European Commission, 2002). http://ec.europa.eu/health/archive/ph_risk/committees/sct/documents/out158_ en.pdf
4) Epidemiological assessment of the occurrence of allergic dermatitis in workers in the construction industry related to the content of Cr (VI) in cement, NIOH, Page 11, 2003.
5) U.S. EPA, Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 3rd ed. EPA/600/7-91/002, Environmental Monitoring and Support Laboratory, U.S. EPA, Cincinnati, OH (1994a) and 4th ed. EPA-821- R-02-013, US EPA, office of water, Washington D.C. (2002).
6) U.S. EPA, Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, 4th ed. EPA/600/4-90/027F, Environmental Monitoring and Support Laboratory, U.S. EPA, Cincinnati, OH (1993). and 5th ed. EPA-821-R-02-012, US EPA, office of water, Washington D.C. (2002).
7) Environmental Impact of Construction and Repair Materials on Surface and Ground Waters. Summary of Methodology, Laboratory Results, and Model Development. NCHRP report 448, National Academy Press, Washington, D.C., 2001.
8) Final report Sediment Phase Toxicity Test Results with Corophium volutator for Portland clinker prepared for Norcem A.S. by AnalyCen Ecotox AS, 2007.
9) TNO report V8801/02, An acute (4-hour) inhalation toxicity study with Portland Cement Clinker CLP/GHS 03-2010-fi ne in rats, July 2010 – unaudited draft approved
10) TNO report V8815/09, Evaluation of eye irritation potential of cement clinker G in vitro using the isolated chicken eye test, April 2010
11) TNO report V8815/10, Evaluation of eye irritation potential of cement clinker W in vitro using the isolated chicken eye test, April 2010
12) Investigation of the cytotoxic and proinflammatory effects of cement dusts in rat alveolar macrophages, Van Berlo et al, Chem. Res. Toxicol., 2009 Sept; 22(9): 1548-58
13) Cytotoxicity and genotoxicity of cement dusts in A549 human epithelial lung cells in vitro; Gminski et al, Abstract DGPT conference Mainz, 2008
14) Comments on a recommendation from the American Conference of governmental industrial Hygienists to change the threshold limit value for Portland cement, Patrick A. Hessel and John F. Gamble, EpiLung Consulting, June 2008
(15) *Exposure to Thoracic Aerosol in a Prospective Lung Function Study of Cement Production Workers; Noto, H., et al; Ann. Occup. Hyg., 2015, Vol. 59, No. 1, 4–24.*
16) MEASE, Metals estimation and assessment of substance exposure, EBRC Consulting GmbH for Eurometaux, http://www.ebrc.de/ ebrc/ebrc-mease.php.
(17) Occurrence of allergic contact dermatitis caused by chromium in cement. A review of epidemiological investigations, Kåre Lenvik, Helge Kjuus, NIOH, Oslo, December 2011.
18) *ECHA Support Questions and answers agreed with National Helpdesks. ID1695 May 2020. https://echa.europa.eu/es/support/qas-support/qas-agreed-with-national-helpdesks*

16.5. Training advice

In addition to health, safety and environmental training programs for their workers, companies must ensure that workers read, understand and apply the requirements of this SDS.

16.6. Other information

Not applicable.

16.7. Classification and procedure used to derive the classification for mixtures according to Regulation (EC) No. 1272/2008 [CLP]

Classification according to Regulation (EC) No. 1272/2008	*Classification Procedure*
Skin irritation 2 H315	*Test results*
Serious eye damage / Eye irritation 1 H318	*Test results*
Specific Systemic Toxicity Target Organ (single exposure) 3, H335	*Experience in Humans*

16.8. Disclaimer

The information on this data sheet reflects the currently available knowledge and is reliable provided that the product is used under the prescribed conditions and in accordance with the application specified on the packaging and/or in the technical guidance literature. Any other use of the product, including the use of the product in combination with any other product or any other process, is the responsibility of the user.

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

This revision of the Cement Safety Data Sheet cancels and replace version 3.3 issued in May 2020.