

SAFETY DATA SHEET

OIL WELL CEMENT

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Section 1. IDENTIFICATION OF THE MIXTURE AND THE COMPANY

1.1 Product identifier: Oil Well Cement according to standard ISO 10426-1/API Spec 10 A

Cement Standard Formulas Name (according to (EU) 2020/1677)	Standards (equivalent)	UFI
Cement Standard Formula - 1	EN 197-1 - CEM I	2200-U0CW-500E-QU85

1.2 Relevant identified uses of the mixture and uses advised against

Cement is used as a hydraulic binder for the manufacture of concrete, hydraulic mortar, plaster, etc. The cements, conforming to product and chemical/physical requirements defined by technical standards, are used in the industrial production of construction materials and by professionals as well as consumers in building and construction work.

The identified uses of cements and of mixtures containing cement (hydraulic binders) include both dry products and products in a wet suspension (paste),

PROC	Process categories - Identified uses	Producer / Formulation	Professional / Industrial Use of building materials
2	Use in closed and continuous process, with occasional controlled exposure	X	X
3	Use in closed batch process (synthesis or formulation)	X	X
5	Mixing or blending in batch process for the formulation of preparations and articles (contact in various phases and/or significant contact)	X	X
7	Industrial spray application		X
8a	Transfer of a substance or preparation (*) (filling/emptying) from/to vessels/large containers at non-dedicated facilities		X
8b	Transfer of a substance or preparation (*) (filling/emptying) from/to vessels/large containers at dedicated facilities	X	X
9	Transfer of a substance or preparation (*) in small containers (dedicated filling line, including weighing)	X	X
10	Application with rollers or brushes		X
11	Non-industrial spray application		X
13	Treatment of articles by dipping and pouring		X
14	Production of preparations (*) or articles by tableting, compression, extrusion, pelletization	X	X
19	Manual mixing with direct contact, with only the use of personal protective equipment (PPE)		X
22	Potentially closed processing operations with minerals/metals at high temperature Industrial environment		X
26	Handling of solid inorganic substances at room temperatures	X	X

(*) NB: To remain consistent with the descriptor system indicated in IUCLID 5.2, in the table the term "preparation" was not replaced with the new definition of "mixture".

1.3 Information on the supplier of the Safety Data Sheet (SDS)

BUZZI UNICEM s.r.l.
Via Luigi Buzzi 6
15033 Casale Monferrato (AL)
tel. +39 0142 416411
e-mail of manager issuing the SDS: reach@buzziunicem.it

1.4 Emergency telephone number: +39 0382 24444 - Pavia Poison Center (see also paragraph 16.7)
Available outside office hours? x YES 24 hours/day.

Section 2. HAZARDS IDENTIFICATION

2.1 Classification of the mixture

In accordance with Regulation (EC) No. 1272/2008 (CLP).

Hazard class	Hazard category	Risk phrases
Skin irritation	2	H315: causes skin irritation
Serious eye damage / eye irritation	1	H318: causes serious eye damage
Skin sensitization	1B	H317: may cause an allergic skin reaction
Specific target organ toxicity (single exposure - STOT SE, respiratory irritation)	3	H335: may cause respiratory irritation

2.2 Label elements

In accordance with Regulation (EC) No. 1272/2008 (CLP).



Warnings

Danger

Risk phrases

- H318:** causes serious eye damage
- H315:** causes skin irritation
- H317:** may cause an allergic skin reaction
- H335:** may cause respiratory irritation

Precautionary statements

- P102:** Keep out of reach of children.
- P280:** Wear protective gloves/protective clothing/eye protection/face protection
- P305+P351+P338+P310:** IF IN EYES: rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do; continue rinsing. If you feel unwell, contact a Poison Center or a doctor

- P302+P352+P333+P313:** IF ON SKIN: wash with plenty of soap and water; soap; if skin irritation or rash occurs, contact a doctor.
- P261+P304+P340+P312:** Avoid breathing in the dust IF INHALED: remove person to fresh air and keep at rest in a position comfortable for breathing. If they feel unwell, contact a Poison Center or a doctor.
- P101:** If medical advice is needed, have the product container or label at hand
- P501:** Dispose of the product/containers in compliance with current regulations.

2.3 Other hazards

In the presence of water, for example when manufacturing concrete or mortar, or when it gets wet, the cement produces a strong alkaline solution (high pH due to the formation of hydroxides of calcium, sodium and potassium).

Frequent inhalation of cement dust over a long period of time increases the risks of developing lung diseases (especially in case of repeated and prolonged exposure to airborne dust from formulations of the mixture possibly containing siliceous components - *for more details, see Subsection 15.1*).

Repeated and prolonged contact of cement and/or its pastes on moist skin (due to sweat or humidity) may cause irritation and/or contact dermatitis [*Reference (4)*].

Both cement and cement pastes, in case of prolonged contact with the skin, may cause sensitization due to the presence of trace amounts of chromium (VI) salts; if necessary, the effect can be diminished by adding a specific reducing agent to keep the level of sensitizing soluble chromium (VI) below the limit of 0.0002% (2 ppm) of the total dry weight of the cement itself, in accordance with the legislation specified under Subsection 15.1 [*Reference (3)*].

If large amounts are ingested, cement may cause ulcerations of the digestive system.

Under normal conditions of use, cement and cement pastes do not pose any particular risks to the environment, as long as the recommendations provided under Sections 6, 8, 12 and 13 are followed.

The cement does not meet the criteria for PBT or vPvB, in accordance with Annex XIII of Regulation 1907/2006/EC "REACH".

Cement may contain respirable free crystalline silica.

Section 3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances

Not applicable

3.2 Mixtures

Cements made in accordance with standard ISO 10426-1 (API Specification 10 A).

3.2.1 Components presenting a health hazard

Constituent	% in weight	EC number	CAS	"REACH" Registration no.	Classification according to 1272/2008/EC			Regulation
					Hazard class	Hazard category	Hazard indication	
Portland cement clinker	95÷100	266-043-4	65997-15-1	None (*)	Skin irritation	2	H315	
					Skin sensitization	1B	H317	
					Eye damage	1	H318	
					STOT SE	3	H335	

(*) **clinker:** C&L Notification no. 02-2119682167-31-0000 dated 15 December 2010; updated on 1 July 2013 with presentation of Report no. QJ420702-40.

Section 4. FIRST AID MEASURES

4.1 Description of first aid measures

General notes

No personal protective equipment is needed for first responders. First aid workers should avoid inhaling cement dust and contact with wet cement or preparations containing wet cement. If this is not possible, first aid workers must use the personal protective equipment described under Section 8.

Following inhalation

Move the person to fresh air; dust in throat and nostrils should clear spontaneously. Contact a doctor if irritation persists, or later develops, or if discomfort, coughing or other symptoms persist.

Following skin contact

For dry cement, remove and rinse abundantly with water. For wet/damp cement, wash skin with plenty of water and pH neutral soap or a mild detergent. Remove contaminated clothing, footwear, watches, etc. and clean thoroughly before reusing them. Consult a doctor in all cases of irritation or burns.

Following contact with eyes

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

Remove contact lenses if any. Tilt head to injured eye, open the eyelids wide and flush eye(s) immediately with plenty of water for at least 20 minutes to remove all particles; If possible, use isotonic water (0.9% NaCl).

If necessary, contact a specialist in occupational medicine or an eye specialist.

Following ingestion

Do not induce vomiting. If the person is conscious, wash out mouth with water and give plenty of water to drink. Get immediate medical attention or contact a Poison Center.

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

Eyes: eye contact with cement dust (dry or wet) may cause irritation or serious and potentially irreversible injuries.

Skin: Cement and/or cement pastes may have an irritating effect on moist skin (due to sweat or humidity) after prolonged contact or may cause dermatitis after repeated and prolonged contact. Furthermore, prolonged skin contact with wet cement and/or wet cement preparations (mortars, concrete, renders, etc.) may cause irritation, serious contact dermatitis or burns. [\[for additional details see Reference \(1\)\]](#)

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

Ingestion: Accidental ingestion of cement may cause ulcerations of the digestive system.

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

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

See the information provided under Subsection 4.1; When contacting a doctor, take the Safety Data Sheet (SDS) with you.

Section 5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Cement is not flammable. Therefore, in the event of a fire in the surrounding area, all types of fire extinguishing media can be used.

5.2 Special hazards arising from the mixture

Cement is 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 risks. Therefore, no special protective equipment is required for fire-fighters.

Section 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel

Wear personal protective equipment (PPE) as described under Section 8 and follow the advice for safe use and handling given under Section 7.

6.1.2 For emergency responders

Special emergency procedures are not required. However, eyes, skin and respiratory protections are needed in situations with high dust levels.

6.2 Environmental precautions

Avoid discharging or dispersing cement down sewage and drainage systems and/or into bodies of water (e.g., watercourses).

6.3 Methods and materials for containment and cleaning up

Dry cement

Use dry clean up methods, such as vacuum clean-up or vacuum extraction [industrial portable units, equipped with high efficiency particulate filters or equivalent technology], which do not cause airborne dispersion. Never use compressed air.

Alternatively, wipe up the dust by dampening it and collect it with a broom or mop. Where this is not possible, remove by slurring with water (see: wet cement).

Make sure that the workers wear suitable personal protective equipment (see Section 8), in order to prevent inhalation of the cement dust and contact with skin and/or eyes.

Place the spilled material into containers. In case of large spills of cement, close or cover any water wells located nearby.

Wet cement

Clean up wet cement and place in containers. Allow the material to dry and harden before disposal as described under Section 13.

6.4 Reference to other sections

For additional details, see Sections 8 and 13.

Section 7. HANDLING AND STORAGE

7.1 Precautions for safe handling

7.1.1 Protective measures

Follow the recommendations provided under Section 8.

To clean up dry cement, see Subsection 6.3.

Measures to prevent fire

No precautions are necessary since cement is neither combustible nor flammable.

Measures to prevent aerosol and dust generation

Do not sweep or use compressed air. Use dry clean up methods (such as vacuum clean-up and/or vacuum extraction) which do not cause airborne dispersion of the cement dust.

Also follow the recommendations provided under Subsection 15.1 "Good practice guide".

For additional information, refer to the guidelines adopted under the Agreement on Workers Health Protection through the Good Handling and Use of Crystalline Silica and Products containing it, by the European trade associations of workers and employers. Safe handling practices can be downloaded at the following link: <http://www.nepsi.eu/agreement-good-practice-guide/good-practice-guide.aspx>.

Measures to protect the environment

When handling the cement, avoid releasing it into the environment (see also Subsection 6.2)

7.1.2 Information of a general nature on hygiene in the workplace

At the workplace, do not eat or drink in areas where cement is handled and/or stored. In dusty environments, wear dust masks and protective goggles. Use protective gloves to avoid contact with skin.

7.2 Conditions for safe storage, including any incompatibilities

Cement must be stored out of the reach of children, away from acids, in suitable closed containers (storage silos), in a cool, dry, unventilated location, in order to preserve its technical characteristics and, in any case, preventing the dispersion of dust (see Section 10).

Engulfment hazard: cement can thicken or stick to the walls of the confined space in which it is stored; the mixture can release, collapse or fall unexpectedly.

In order to prevent engulfment or suffocation risks (during maintenance work or cleaning and/or unclogging operations), do not enter confined spaces - such as silos, hoppers, bulk trucks or other containers or vessels that store or contain the cement – without adopting specific safety procedures and suitable personal protective equipment.

Do not use aluminum containers for the storage or transport of mixtures containing moist cement due to incompatibility of the materials.

7.3 Specific end uses

No additional information (see also Subsection 1.2).

7.4 Effectiveness of the soluble chromium (VI) reducing agent

The integrity of the package and compliance with the proper storage procedures described above are essential conditions in order to ensure the effectiveness of the reducing agent for the period of time indicated in the delivery note or on each individual bag.

This expiry concerns exclusively the effectiveness of the reducing agent in keeping the content of soluble chromium (VI), determined according to standard EN 196-10, below the limit of 0.0002% of the total dry weight of the ready-to-use cement, required by current legislation (see Subsection 15.1), without prejudice to the limits of use of the product dictated by the general rules of storage and use of the product itself.

Section 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

The threshold limit value for the time-weighted (TLV-TWA), adopted for workplaces by the American Conference of Governmental Industrial Hygienists (ACGIH), for Portland cement particulates is equal to 1 mg/m³ (respirable fraction) *[for additional information, see also Subsection 15.1]*

To assess the **exposure level** (DNEL = Derived No-Effect Level):

- DNEL (respirable fraction): 1 mg/m³
- DNEL (dermal): not applicable
- DNEL (oral): not relevant

Instead, the tool used for the risk assessment, MEASE, [see Reference (17)] works with the inhalable fraction. Therefore, a further precautionary condition may be implicitly correlated to the risk assessment procedure for occupational exposure.

For workers, no DNEL data for dermal exposure is available, neither from human hazard studies nor from human experience. Since cement dust is classified as irritating to skin and eyes, appropriate protective measures must be adopted to avoid contact.

To assess the **environmental risk** (PNEC = Predicted No Effect Concentration):

- PNEC for water: not applicable
- PNEC for sediment: not applicable
- PNEC for soil: not applicable

The risk assessment for ecosystems is based on the resulting pH impact on water. In any case, the pH of surface water, groundwater and ST effluent should not be above 9.

With regard to the possible presence of crystalline free silica in the respirable fraction, for the professional user, comply with the limits for occupational exposure to respirable crystalline silica during the 8 working hours (OEL (UE) = 0.1 mg/m³ (respirable fraction, 8h) VLEP (IT) = 0.1 mg/m³ (respirable fraction, 8h) - Annex XLIII of Legislative Decree 81/2008)

The American Conference of Governmental Industrial Hygienists (ACGIH) recommends a threshold value of 0.025 mg/m³.

8.2 Exposure controls

For each Process Category (PROC), the user can choose between options (A) and (B) shown in Table 8.2.1 below, depending on the specific plant situation.

After choosing an option, it must also be selected in Table 8.2.2 of Subsection 8.2.2 "*Individual protection measures, such as personal protective equipment (PPE) – Specifications for respiratory protection equipment*". Therefore, the only possible combinations are between (A)-(A) and (B)-(B).

8.2.1 Suitable engineering controls

At facilities where cement is handled, transported, loaded, unloaded and stored, suitable hygienic and protective measures must be adopted in order to protect the workers and contain dust emission in the workplaces, as specified in the table below (evaluated for a DNEL value = 1 mg/m³). Localized controls will be defined based on the existing plant-engineering situation, and consequently the specific corresponding equipment for respiratory protection will be identified, as indicated in the Table under Subsection 8.2.2.

Table 8.2.1

Exposure scenario	PROC (*)	Exposure	Localized controls	Efficiency
Industrial production / Formulation of hydraulic building and construction materials	2, 3	Duration is not restricted (up to 480 minutes per shift, 5 shifts a week) (#) < 240 min	Not required	-
	14, 26		A) not required, or B) general local ventilation	- 78 %
	5, 8b, 9		General local ventilation	78 %
Industrial uses of dry hydraulic building and construction materials (indoor and outdoor)	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 suspensions of hydraulic building and construction materials	7		A) not required, or B) general local ventilation	- 78 %
	2, 5, 8b, 9, 10, 13, 14		Not required	-
Professional uses of hydraulic building and construction materials (indoor and outdoor)	2		A) not required, or B) general local ventilation	- 72 %
	9, 26		A) not required, or B) general local ventilation	- 72 %
	5, 8a, 8b, 14		General local ventilation	72 %
	19 (#)		Localized controls are not applicable. The processes may be carried out only in well-ventilated areas or outdoors	-
Professional uses of wet suspensions of hydraulic building and construction materials	11	A) not required, or B) general local ventilation	- 72 %	
	2, 5, 8a, 8b, 9, 10, 13, 14, 19	Not required	-	

(*) PROCs are the identified uses, as defined under Section 1.2.

8.2.2 Individual protection measures, such as Personal Protective Equipment (PPE)

General:

At facilities where the cement is handled, transported, loaded and unloaded and stored, suitable measures must be adopted for the protection of workers and for the containment of releases into the work environments Do not eat, drink or smoke when working with the cement in order to avoid contact with skin or mouth. Immediately after handling or working with the cement or cement-containing products/preparations, workers should wash thoroughly with neutral soap or mild detergent or use moisturizing cream. Remove contaminated clothing, footwear, glasses, etc. and clean them thoroughly before using them again.

Eye/face protection



Wear approved glasses or safety masks certified according to UNI EN 166 when handling dry or wet cement to prevent contact with eyes.

Skin protection



Use gloves with mechanical abrasion resistance according to EN ISO 388 with nitrile or neoprene coating, preferably for ¾ or totally in case of more strenuous activities. In case of possible contact with the wet substance use gloves with specific chemical protection according to EN ISO 374 with specific

thickness and degree of permeation (especially to alkalis) according to the type of use (immersion or possible accidental contact). Always replace damaged or drenched gloves immediately. In some cases, such as when laying concrete or screed, waterproof pants or knee pads are necessary.

Respiratory protection



When a worker may be potentially exposed to a concentration of respirable dust exceeding the exposure limits, use suitable respiratory protection, proportionate to the level of dustiness and conforming to the relevant EN standards (such as filtering facepieces certified according to UNI EN 149).

The personal protective equipment defined in relation to the localized controls and [evaluated for a DNEL value = 1 mg/m³](#), are specified in the following table.

Table 8.2.2

Exposure scenario	PROC (*)	Exposure	Specific respiratory protection equipment (RPE)	RPE efficiency – Assigned Protection Factor (APF)
Industrial production / 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) 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 dry hydraulic building and construction materials (indoor and outdoor)	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 of hydraulic building and construction materials	7		A) Mask P3 (FF, FM) or B) Mask P2 (FF, FM)	APF = 20 APF = 10
	2, 5, 8b, 9, 10, 13, 14		Not required	--
Professional use of hydraulic building and construction materials (indoor and outdoor)	2		A) Mask P2 (FF, FM) or B) Mask P1 (FF, FM)	APF = 10 APF = 4
	9, 26		A) Mask P3 (FF, FM) or B) Mask P2 (FF, FM)	APF = 20 APF = 10
	5, 8a, 8b, 14		Mask P3 (FF, FM)	APF = 20
	19 (#)		Mask P3 (FF, FM)	APF = 20
Professional uses of wet suspensions of hydraulic building and construction materials	11		A) Mask P3 (FF, FM) or B) Mask P2 (FF, FM)	APF = 20 APF = 10
	2, 5, 8a, 8b, 9, 10, 13, 14, 19		Not required	--

(*) PROCs are the identified uses, as defined under Section 1.2.

An example of the assigned protection factors (APF) for various respiratory protective equipment (RPE), according to EN 529:2005, can be found in the glossary of the MEASE approach [\[see Reference \(16\)\]](#).

Thermal hazards

Not applicable

8.2.3 Environmental exposure controls

See the engineering control measures to prevent dispersion of cement dust into the environment. Adopt measures to ensure that the cement does not reach water (sewers or ground or surface water).

At facilities where cement is handled, transported, loaded, unloaded and stored, suitable measures must be adopted to contain the dispersion of cement dust in the workplace (see also Subsections 8.2.1 and 15.1).

In particular, preventive measures must ensure the containment of the concentration of respirable particulate below the threshold limit value for the time-weighted average (TLV-TWA), adopted by the American Conference of Governmental Industrial Hygienists (ACGIH) for Portland cement.

Likewise, all the appropriate engineering-organizational steps must be taken in order to prevent the dispersion or accidental release of cement dust during the various stages of production and use, mainly to prevent dumping onto the soil or into watercourses or sewers.

The environmental impact and the potential hazard to organisms/aquatic ecosystems are related to the increase in the pH due to the formation of hydroxides; on the other hand, ecotoxicity resulting from other inorganic components (ions) is negligible compared to the negative effect on the pH.

In any case, any negative effects that might occur during production and use of the cement would be expected to take place on a local scale at the industrial installation. The pH of the effluent and surface water should not exceed 9.

Otherwise, it could have an impact on municipal sewage treatment plants (STPs) and industrial wastewater treatment plants (WWTPs).

For assessment of this exposure, a systematic approach is recommended:

- Tier 1: collect information on effluent pH and the contribution of the cement dust to any change; if the pH is above 9 due to the predominant contribution of the cement dust, suitable preventive measures need to be adopted.
- Tier 2: collect information on receiving water pH after the discharge point; the pH must not exceed the value of 9.
- Tier 3: sample and measure the pH in the receiving water, after the discharge point. If the pH is below 9, it is reasonable to assume the absence of any negative effect, while if the pH is found to be above 9, neutralizing actions must be taken at the discharge, in order to avoid any environmental impact due to the dispersion of cement dust, during the various stages of production and use.

On the other hand, no specific preventive measures are required for the impact on the soil, except for the proper application of ordinary, effective managerial practices.

For additional details, see Section 6.

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a) Appearance: cement is a solid inorganic material in powder form

b) Color: gray or white powder (dry cement)

c) Odor: odorless

d) Melting point/freezing point: > 1250 °C/not relevant

Boiling point or initial boiling point and boiling range: Not applicable since, under normal atmospheric conditions, the melting point is > 1250 °C

f) Flammability (solid, gas): Not applicable since it is a non-combustible solid and does not cause or contribute to fire through friction

g) Upper/lower explosive limits: Not applicable since it is not a flammable gas

h) Flash point: not applicable since it is not a liquid

i) Auto-ignition temperature: not applicable (no pyrophoricity – no organo-metallic, organo-metalloid or organo-phosphine bindings or their derivatives, and no other pyrophoric constituent in the composition)

- j) Decomposition temperature: not applicable since there is no organic peroxide present*
k) pH: (T = 20 ° C in water, water-solid ratio 1:2): 11-13.5
l) Kinematic viscosity: not applicable since it is not a liquid
m) Solubility in water (T = 20 ° C): light (0.1-1.5 g/l)
n) Partition coefficient: n-octanol/water: not applicable since it is an inorganic mixture
o) Vapor pressure: not applicable since the melting point is > 1250 ° C
p) Density and/or relative density: 2.7-3.20; apparent density: 0.9-1.5 g/cm³
q) Relative vapor density: not applicable since the melting point is > 1250 ° C
r) Characteristics of the particles: main particle size: 5-30 μm

9.2 Other information

Not applicable

9.2.1 Information on physical hazard classification

Not applicable

9.2.2 Other safety characteristics

Not applicable

Section 10. STABILITY AND REACTIVITY

10.1 Reactivity

When mixed with water, cement hardens and forms a stable mass that is not reactive in the environment.

10.2 Chemical stability

The cement as such is stable as long as it is properly stored (see Section 7); it must be kept dry, avoiding contact with incompatible materials.

Wet cement is alkaline and incompatible with acids, ammonium salts, aluminum and other non-noble metals. It decomposes in hydrofluoric acid to produce silicon tetrafluoride, a corrosive gas.

Moreover, cement reacts with water to form silicates and calcium hydroxide; these silicates react with powerful oxidants such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride and oxygen difluoride

Integrity of the package and compliance with the storage procedures described under Subsection 7.2, are essential conditions in order to maintain the effectiveness of the reducing agent for the period of time specified on the bag or in the delivery note.

10.3 Possibility of hazardous reactions

Cement does not cause hazardous reactions.

10.4 Conditions to be avoided

The presence of humidity during storage may result in the loss of product quality and the formation of lumps (or blocks), thus making it difficult to handle.

10.5 Incompatible materials

Contact with acids, ammonium salts, aluminum or other non-noble metals can cause exothermic reactions (temperature rise). Furthermore, hydrogen forms when aluminum dust comes into contact with wet cement.

10.6 Hazardous decomposition products

Cement does not decompose into any hazardous products.

Section 11. TOXICOLOGICAL INFORMATION

11.1 Information on the hazard classes defined in Regulation (EC) No. 1272/2008.

Hazard class	Cat.	Effect	References
Acute toxicity - dermal	-	Limit test in vivo and in vitro on animals (rabbit, contact 24 hours, 2 g/kg body weight) - not lethal. Based on the available data, the classification criteria are not met.	(2)
Acute toxicity - inhalation	-	No acute toxicity by inhalation observed. Based on the 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 the available data, the classification criteria are not met.	Literature survey
Corrosion / skin irritation	2	Cement in contact with wet skin may cause thickening, cracking or fissuring of the skin. Prolonged contact in combination with existing abrasions may cause severe burns.	(2) human experience
Serious eye damage/irritation	1	Clinker caused heterogeneous effects on the cornea and the calculated irritation index was 128. Cements contain varying quantities of clinker and secondary components, such as gypsum, blast furnace slag, fly ash, limestone and natural pozzolan. Direct contact with cement may cause corneal damage by mechanical stress, immediate or delayed irritation or inflammation. Direct contact with large amounts of dry cement or splashes of wet cement may cause effects ranging from moderate eye irritation (e.g., conjunctivitis or blepharitis) to chemical burns and blindness.	(10), (11)
Skin sensitization	1B	Some people may develop eczema as a result of 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) that causes allergic contact dermatitis. The response may appear in a variety of forms, ranging from a mild skin rash to severe dermatitis, and is a combination of the two mechanisms referred to above. No sensitizing effect is expected if the cement contains a soluble CR (VI) reducing agent, as long as the specified period of effectiveness of the reducing agent is not exceeded [see Reference (3)] .	(3), (4), (17)
Respiratory sensitization	-	There is no indication of sensitization of the respiratory system. Based on the available data, the classification criteria are not met.	1
Mutagenicity of embryonic cells (germ)	-	No indication. Based on the available data, the classification criteria are not met.	(12), (13)
Carcinogenicity	-	No causal association has been established between exposure to Portland cement and cancer. 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 due to a lack of data. In vitro or animals studies do not provide indications of carcinogenicity which are sufficient to classify the agent with one of the other notations. Based on the available data, the classification criteria are not	1 14

		met.	
Reproductive toxicity	-	Based on the 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 the occupational exposure limits. Overall, the evidence gathered 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 occupational exposure limit can lead to coughing, shortness of breath and chronic obstructive alterations in the respiratory tract. There were no chronic effects at low concentrations. Based on the available data, the classification criteria are not met.	15
Risk of aspiration	-	Not applicable since cement is 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

Prolonged inhalation of respirable cement dust may aggravate existing respiratory illnesses and/or medical conditions such as emphysema or asthma and/or existing skin and/or eye conditions.

11.2 Information on other hazards

None

11.2.1 Endocrine disrupting properties

Not applicable

11.2.2 Other information

Not applicable

Section 12. ECOLOGICAL INFORMATION

12.1 Toxicity

Cement is not hazardous to the environment.

Eco-toxicological tests with Portland cement on *Daphnia magna* [Reference (5)] and *Selenastrum coli* [Reference (6)] have shown little toxicological impact. Therefore, LC50 and EC50 values could not be determined [Reference (7)].

There is no indication of sediment phase toxicity [Reference (8)].

In the case of large amounts of cement dispersed in water, under certain circumstances there may be ecotoxicity effects for aquatic life due to the consequent increase in pH.

12.2 Persistence and degradability

Not relevant since cement is an inorganic material. After hardening, cement presents no toxicity risks.

12.3 Bioaccumulation potential

Not relevant since cement is an inorganic material. After hardening, cement presents no toxicity risks.

12.4 Mobility in soil

Not relevant since cement is an inorganic material. After hardening, cement presents no toxicity risks.

12.5 Results of PBT and vPvB assessment

Not relevant since cement is an inorganic material. After hardening, cement presents no toxicity risks.

12.6 Endocrine system disrupting properties

Not relevant

12.7 Other adverse effects

Not relevant

Section 13. DISPOSAL CONSIDERATIONS

Cement and any packaging that need to be disposed of must be managed according to the provisions of Part IV "Waste management regulations" of Legislative Decree 152/2006 "Environmental Regulations" as amended, and subsequent implementing decrees.

13.1 Waste treatment methods

Do not dispose in sewers or surface water.

Product - Cement beyond its expiry date

When it is shown to contain more than 0.0002% of soluble chromium VI: it must not be used/sold except for use in closed, controlled and fully automated processes or it must be recycled or managed in accordance with Legislative Decree 152/2006 as amended or treated again with a reducing agent.

Product – unused residue or dry spillage

CER: 10 13 06 (Dust and particulate)

Collect unused dry residue or dry spills as they are. If necessary, reuse according to shelf-life considerations and the requirement to avoid exposure to dust. In case of disposal, manage in compliance with Legislative Decree 152/2006, as amended.

Product – sludge

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

Product – after the addition of water, hardened

Dispose of according to Legislative Decree 152/2006, as amended. Avoid entry into the sewer system.

Packaging

Empty the packaging and manage it in compliance with current regulations. Assignment of the EER code must be carried out in accordance with the Guidelines adopted pursuant to art. 184, comma 4 of Legislative Decree 152/2006, as amended,

Section 14. TRANSPORT INFORMATION

Cement does not fall within any hazard class for the transport of dangerous goods and, therefore, is not subject to the relevant modal regulations: IMDG (sea), ADR (road), RID (rail), ICAO/IATA (air). During transport, prevent dispersal caused by the wind by using closed containers.

14.1 UN number or ID number

Not relevant

14.2 UN proper shipping name

Not relevant

14.3 Transport hazard classes

Not relevant

14.4 Packing group

Not relevant

14.5 Environmental hazards

Not relevant

14.6 Special precautions for users

Not relevant

14.7 Bulk transport by sea according to IMO instruments

Not relevant

Section 15. REGULATORY INFORMATION

15.1 Health, safety and environmental standards and laws specific for the mixture

- (EC) Regulation 1907/2006 concerning the registration, evaluation, authorization and restriction of chemicals (REACH) as amended
- (EC) Regulation 1272/2008 on the classification, labeling and packaging of substances and mixtures, with modification and repeal of Directives 67/548/EEC and 1999/45/EC and of Regulation 1907/2006/EC (CLP) as amended.
- Legislative Decree 81 dated 9 April 2008 as amended "Implementation of article 1 of Law no. 123 of 3 August 2007 regarding the protection of health and safety in the workplace".
- Decree of the Ministry of Health 10/05/2004 "Implementation of Directive 2003/53/EC on the twenty-sixth amendment to Directive 76/769/EEC of 27/07/1976, relating to restrictions on the marketing and use of certain dangerous substances and preparations (nonylphenol, nonylphenol ethoxylate, **cement**)"
- Decree of the Ministry of Health 17/02/2005 "Adoption of a test method relating to cements, in reference to Ministerial Decree 10/05/2004, which implemented the twenty-sixth amendment of Directive 76/769/EEC"
- EN 196/10 - "Test methods for concrete – Part 10: Determination of the content of soluble chromium VI in cement"
- EN 197/1 – "Cement - Composition, specifications and conformity criteria for common cements"
- EN ISO 10426/01 – Cements and materials for deep-water well cementing
- Legislative Decree 152/2006 "Environmental regulations" as amended
- Directive 2004/37/EC as amended on the protection of workers from the risks related to exposure to carcinogens and mutagens at work
- Regulation 2020/1677/EU amending Regulation (EC) no. 1272/2008 of the European Parliament and of the Council on the classification, labeling and packaging of substances and mixtures in order to improve the workability of information requirements related to emergency health response
- Legislative Decree no. 44 of 1 June 2020 "Implementation of (EU) Directive 2017/2398 of the European Parliament and of the Council of 12 December 2017, which amends Directive 2004/37/EC of the Council on the protection of workers from risks related to exposure to carcinogens or mutagens at work.
- Decree no. 47 of 9 August 2021 approving "Guidelines on waste classification" referred to the resolution of the Council of the National System for Environmental Protection no. 105 of 18 May 2021, as envisaged by art. 184, comma 5 of Legislative Decree no. 152 of 2006, as amended by Legislative Decree no. 116 of 2020.

The so-called "**Good practice guide**", which provides practical information on proper handling and use of **respirable crystalline silica** and products containing it, is available on the website <http://www.nepsi.eu/good-practice-guide.aspx>.

These engineering and operational methods were implemented within the framework of the Social Dialogue "*Agreement on Workers Health Protection through the Good Handling and Use of Crystalline Silica and Products containing it*", signed on 25 April 2006 between employers and workers' representatives from various industrial sectors at the European level, including Cement Companies.

In this context, depending on the specific formulation of the mixture (cf. silica components and the possible content of respirable crystalline silica) and on the methods of use, it is appropriate to implement appropriate technical-organizational measures and systematic monitoring of occupational exposure, keeping in mind that the limit value (TLV-TWA), adopted for work environments by the American Industrial Hygienists Association (ACGIH) for "respirable crystalline silica" is 0.025 mg/m³, referring to the respirable fraction, while for Legislative Decree no. 44 of 1 June 2020 transposition of Directive (EU) 2017/2398, the limit is 0.1 mg/m³ in work involving exposure to respirable crystalline silica dust generated by a work process.

- Restrictions on the marketing and use of cement concerning the content of chromium VI

Regulation 1907/2006/EC concerning the registration, evaluation, authorization and restriction of chemicals ("REACH"), **under Section 47 of Annex XVII**, as amended by **Regulation 552/2009/EC**, prohibits the marketing and use of cement and cement preparations (mixtures) if they contain, when mixed with water, more than 0.0002% (2 ppm) of soluble chromium VI of the total dry weight of the cement itself.

Compliance with this limit threshold is ensured, if necessary, by adding a reducing agent, the effectiveness of which is guaranteed for a predefined time period and with the constant observance of suitable conditions (described under Subsections 7.2 and 10.2).

The expiry only applies to the effectiveness of the reducing agent in relation to Chromium VI salts, without prejudice to the limits of use indicated in the general rules of storage and use of the product itself

Requirements of Regulation 1907/2006/EC "REACH"

Cement, according to "REACH" Regulations, is a mixture and, as such, is not subject to the obligation for registration, which instead concerns substances.

Portland cement clinker is a substance (*classifiable as a UVCB inorganic substance*) exempt from registration according to art. 2.7 (b) and Annex V.10 of REACH, under which the European Agency ECHA has also been notified with the necessary information to make an inventory for classification and labeling (C&L) pursuant to art. 40 of EC Regulation 1272/2008 "CLP" (*see Notification no. 02-2119682167-31-0000 dated 15 December 2010; updated on 1 July 2013 with presentation of Report QJ420702-40*).

Moreover, if some substances used in the manufacturing of cement should become subject to registration, this Safety Data Sheet will be suitably updated based on the information provided by the Registrant and, in particular, if it is found that the data on descriptions of use, exposure scenarios, classification, etc. may entail repercussions on the previously effective risk assessment.

15.2 Chemical safety assessment

No chemical safety assessment was carried out.

Section 16. OTHER INFORMATION

16.1 Indications of changes

This Safety Data Sheet was revised in application of (EU) Regulation 2020/878 which amends Annex II of (EC) Regulation 1907/2006 of the European Parliament and of the Council concerning the registration, evaluation, authorization and restriction of chemicals (REACH) and to take into account the update of the reference standards concerning Personal Protective Equipment.

16.2 Abbreviations and acronyms

ACGIH	American Conference of Governmental Industrial Hygienists
ADR /RID	European Agreements on the transport of Dangerous goods by Road/Railway
APF	Assigned protection factor
CAS	Chemical Abstracts Service
EC	European Community
CLP	Classification, labeling and packaging (EC Regulation 1272/2008)
DNEL	Derived no-effect level
EC50	Half maximal effective concentration
ECHA	European Chemicals Agency
EINECS	European INventory of Existing Commercial chemical Substances
ERC	Environmental release category
ES	Exposure Scenario
FFP	Filtering Face piece against Particles
FMP	Filtering Mask against Particles with filter cartridge
IATA	International Air Transport Association
IMDG	International agreement on the Maritime transport of Dangerous Goods
IMO	International Maritime Organization
IMSBC	International Maritime Solid Bulk Cargoes
LC50	Median lethal dose
LD50	Lethal Dose
MEASE	Metal Estimation and Assessment of Substance Exposure
MS	Member State
NOEL	No Observed Effect Level
OELV	Occupational Exposure Limit Value
PBT	Persistent, bio-accumulative and toxic
PC	Product category
PNEC	Predicted no-effect concentration
PPE	Personal protective equipment
PROC	Process category
REACH	Registration, Evaluation and Authorization of Chemicals (EC Regulation. 1907/2006)
RPE	Respiratory protective equipment
SCOEL	Scientific Committee on Occupational Exposure Limit Values
SDS	Safety Data Sheet
e-SDS	Extended Safety Data Sheet (Safety Data Sheet with exposure scenario)
SE	Single exposure
STP	Sewage treatment plant
STOT	Specific Target Organ Toxicity
SU	Sector of use
TLV-TWA	Threshold Limit Value - Time-Weighted Average
UFI	Unique Formula Identifier
UVCB	Substance of Unknown or Variable composition, Complex reaction products or biological materials
VLE	Exposure Limit Value
vPvB	Very persistent, very Bio-accumulative
w/w	Weight by weight
WWTP	Wastewater treatment plant

16.3 References and sources of main information

- (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*, 4th ed. EPA-821-R-02-013, US EPA, office of water, Washington D.C. (October 2002).
- (6) U.S. EPA, *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, 5th ed. EPA-821-R-02-012, US EPA, office of water, Washington D.C. (October 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.*, (September 2009); 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/industrial-chemicals-reach/projects-and-references/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).

16.4 Classification and procedure used to obtain the classification of mixtures pursuant to (EC) Regulation 1272/2008 [CLP]

The table below lists the classification and procedures used to obtain the classification of the mixture pursuant to EC Regulation 1272/2008 "CLP":

Classification pursuant to (EC) Regulation 1272/2008		Classification procedure
Skin irritation 2	H315	Based on test data
Skin sensitization 1B	H317	Human experience
Eye injuries 1	H318	Based on test data
STOT SE 3	H335	Human experience

The data and test methods used for the purpose of classification of common cements are provided under Subsection 11.1.

16.5 Hazard Statements and Safety advice in force (Respiratory or skin sensitization Serious eye injury/serious eye irritation STOT-single exposure)

See Section 2.

16.6 Training advice

In addition to health, safety and environmental training programs for its own workers, the User company must ensure that workers read, understand and apply the requirements of this Safety Data Sheet.

16.7 Additional information – Methods

See exposure scenario no. 9.1.

16.8 Disclaimer

The information contained in this Safety Data Sheet, updated in accordance with current legal provisions, reflects the currently available and is reliable provided that the product is used under the prescribed conditions and in accordance with the application specified on the package and/or in the technical guidance literature.

Any other use of the product, including in combination with any other product or any other process, is the responsibility of the User.

It is assumed that the User is also responsible for the safety measures specifically identified and for the application of suitable operating procedures concerning the prevention of risks at work, in accordance with current legislation.

Emergency contacts – Italian Poison Control Centers

	CAV – Hospital	City	Address - Zip Code	Telephone no. *
1	Hospital - Universitaria "Ospedali Riuniti"	Foggia	Viale Luigi Pinto 1 - 71122	800183459
2	Hospital "A. Cardarelli"	Naples	Via A. Cardarelli 9 - 80131	081-5453333
3	University Hospital "Umberto I"	Rome	Viale del Policlinico 155 - 00161	06 49978000
4	University Hospital "A. Gemelli"	Rome	Largo Agostino Gemelli 8 - 00168	06 3054343
5	Hospital - Universitaria "Careggi" - Medical Toxicology	Florence	Largo Brambilla 3 - 50134	055 7947819
6	Centro Nazionale di Informazione Tossicologica (National Center for Toxicological Information) IRCCS Fondazione S. Maugeri, Clinica del Lavoro	Pavia	Via Salvatore Maugeri 10 - 27100	0382 24444
7	Hospital "Niguarda Ca' Granda"	Milan	P.za Ospedale Maggiore 3 - 20162	02 66101029
8	Hospital "Papa Giovanni XXII" – Clinical Toxicology	Bergamo	Piazza OMS 1 - 24127	800 883300
9	Pediatric Hospital "Bambino Gesù" DEA Acceptance and Emergency Ward	Rome	Piazza Sant'Onofrio 4 - 00165	06 68593726
10	Verona Integrated Hospital	Verona	Piazzale Aristide Stefani, 1 - 37126	800011858

* from abroad: +39 xxx xxxxxx

This Safety Data Sheet, as well as any subsequent revisions, is available in digital form on the company website: www.buzziunicem.it/schede-sicurezza