

# SAFETY DATA SHEET PREMIXED

**Issue date:** 01/01/2023

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## Section 1. IDENTIFICATION OF THE MIXTURE AND THE COMPANY

**1.1 Product identifier:** **Premixed** (*hereinafter referred to as mixture*)

Trade name: see Subsection 16.5.

	UFI
Premixes /Prontapresa®	3800-F0M0-300M-N6FG
CENUPREM	HH00-YOP6-1003-M76P
ECO Premixes	PC00-Y09D-E003-9J1J
ROCKET	3800-F0M0-300M-N6FG

### 1.2 Relevant identified uses of the mixture and uses advised against

Premixed is mixed with water and used as both finishing and smoothing plaster in building applications and as mortar for walls and paving blocks.

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 processes for the formulation of preparations (*) and articles (contact in various phases and/or significant contact)	X	X
7	Industrial spraying		X
8a	Transfer of substance or preparation (*) (filling/emptying) from/to vessels/large containers at non-dedicated facilities		X
8b	Transfer of substance or preparation (*) (filling/emptying) from/to vessels/large containers at dedicated facilities	X	X
9	Transfer of substance or preparation (*) into small containers (dedicated filling line, including weighing)	X	X
10	Roller application or brushing		X
11	Non-industrial spraying		X
13	Treatment of articles by dipping and pouring		X
14	Production of preparations (*) or articles by tableting, compression, extrusion, pelletization	X	X
19	Hand mixing with intimate contact, only using personal protective equipment (PPE)		X
26	Handling of solid inorganic substances at room temperature	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 Details of 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](mailto:reach@buzziunicem.it)

### 1.4 Emergency telephone number: +39 0382 24444 - Pavia Poison Center (see also Subsection 16.7)

Available outside of business hours?  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	Hazard statements
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 tract irritation)	3	H335: may cause respiratory irritation

### 2.2 Label elements

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



#### Warnings

#### Hazard

#### Hazard statements

**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+:** IN CASE OF CONTACT WITH EYES: rinse cautiously with water

<b>P338+P310:</b>	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 immediately.
<b>P302+P352+ P333+P313:</b>	IN CASE OF CONTACT WITH SKIN: wash with plenty of water and soap; if skin irritation or rash occurs, contact a doctor.
<b>P261+P304+ P340+P312:</b>	Avoid breathing in the dust IN CASE OF INHALATION: 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.
<b>P101:</b>	If medical advice is needed, have the product container or label at hand
<b>P501:</b>	Dispose of the product/container in compliance with regulations in force.

### 2.3 Other hazards

When the mixture is mixed with water, for example when manufacturing plasters or mortars, or when it gets wet, it produces a strong alkaline solution (high pH due to the formation of calcium, sodium and potassium hydroxides).

Repeated inhalation of the mixture dust, for a long period of time, increases the risk of developing lung diseases.

Some special formulations may contain a percentage of free crystalline silica, which requires the implementation of suitable technical-organizational measures and the systematic monitoring of occupational exposure (for additional information, see Subsection 15.1).

Repeated and prolonged contact of the mixture and/or its paste on wet skin (due to sweat or humidity) can cause irritation and/dermatitis [Reference (4)].

In case of prolonged contact with the skin, both the mixture and its paste may cause sensitization and/or allergic reaction in some individuals due to the presence of traces of chromium VI salts; if necessary, the effect can be diminished by adding a specific reducing agent to keep the content of soluble chromium VI in concentrations of less than 0.0002% (2 ppm) of the total dry weight, in compliance with the regulatory provisions referred to in Subsection 15.1 [Reference (3)].

If swallowed in significant quantity, the mixture may cause ulcerations of the digestive system.

Under normal conditions of use, the mixture and its paste do not present any particular risks for the environment, subject to compliance with the recommendations given under Sections 6, 8, 12 and 13 below.

The mixture does not meet the criteria for PBT or vPvB, pursuant to 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

#### 3.2.1 Components presenting a health hazard

Pre-mixed is an inorganic product consisting of a finely ground mixture of solid materials, such as limestone and/or silica sands, cement and/or hydraulic binders, calcium oxide or hydroxide (<6%), with the addition of additives made of cellulose. Therefore, the qualitative-quantitative formulation of the various components varies depending on the specific performance characteristics (cf. workability, setting time, compression and flexural strengths, etc.).

Common cements, conforming to the requirements of standard EN 197-1 "Composition, specifications and conformity criteria for common cements" as amended, masonry cements (MC) conforming to the

requirements of standard UNI EN 413-1 "Masonry cement - Part 1: Composition, specifications and conformity criteria", cements with very low heat (VLH) of hydration, conforming to standard UNI EN 14216 "Cement - Composition, specifications and conformity criteria for special cements at heat for hydration" are used, as well as hydraulic binders for non-structural applications (HB), conforming to standard UNI EN 15368 "Hydraulic binder for non-structural applications - Definition, specifications and compliance", and hydraulic binders made of sulphoaluminate cement.

The cement and/or the hydraulic binder are an inorganic product, consisting of a finely ground mixture of clinker, gypsum and other specific constituents (limestone, pozzolan, blast-furnace slag, fly ash, etc.), defined by specific technical standards.

Constituent	% in weight	EC number	CAS	"REACH" Registration no.	Classification according to Regulation 1272/2008/EC		
					Hazard class	Hazard category	Hazard statements
Portland cement clinker	20÷100	266-043-4	65997-15-1	None (*)	Skin irritation Skin sensitization Eye damage STOT SE	2 1B 1 3	H315 H317 H318 H335
Flue dust [filter (CKD) and by-pass (BPD) dust]	0.1÷5	270-659-9	68475-76-3	01-2119486767-17-0018 (10 November 2010)	Skin irritation Skin sensitization Eye damage STOT SE	2 1B 1 3	H315 H317 H318 H335
Calcium hydroxide - Calcium (di)hydroxide [Ca(OH) <sub>2</sub> ]	0.1÷6	215-137-3	1305-62-0	01-2119475151-45-0xxx (26 November 2010)	Skin irritation Eye damage STOT SE	2 1 3	H315 H318 H335
Calcium oxide [CaO]	0.1÷6	215-138-9	1305-78-8	01-2119475325-36-0xxx (26 November 2010)	Skin irritation Eye damage STOT SE	2 1 3	H315 H318 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.

" Premixed is made of limestone Portland cements and/or hydraulic binders, with a clinker content which, on average, exceeds 50%; the CKD and/or BPD filters dusts (known as flue dust), if used in the formulation of the cements, are dosed as a secondary constituent.

In the formulation of the mixture, depending on the intended application, components (substances and/or mixtures), such as pozzolan, blast furnace slag, fly ash, chemical gypsums, etc. can be used, as well as setting regulator additives, reducing agents and sand of natural origin, whose toxicological characteristics and risk levels, in any case also depending on the quantitative level, are equal or inferior to those of the clinker.

## Section 4. FIRST AID MEASURES

### 4.1 Description of first aid measures

#### **General notes**

Rescue workers do not need personal protective equipment, but they must avoid inhaling the dust and contact with the wet mixture, 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 mixture, remove and rinse thoroughly with water.

For wet and/or moist mixture, wash the affected area with plenty of water and neutral pH soap or a suitable mild detergent. Moreover, remove contaminated clothing, shoes, glasses, watches, etc. and clean thoroughly before wearing them again. 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 plenty of water. Consult a doctor immediately or contact a Poison Center.

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

**Eyes:** in contact with the eyes, the dust of the mixture (dry or wet) may cause irritation or serious and potentially irreversible injury.

**Skin:** the mixture and/or its preparations 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. In addition, prolonged contact of the skin with the moist mixture and/or its moist preparations (mortars, plasters, etc.) may cause irritation, dermatitis or burns.  
*[for additional details see Reference (1)]*

**Inhalation:** repeated inhalation of the mixture dust, for a long period of time, increases the risk of developing lung diseases.

**Ingestion:** accidental ingestion of the mixture may cause ulcers of the digestive tract.

**Environment:** under normal conditions of use, the mixture 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

The mixture is non-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

The mixture is non-combustible and non-explosive and will not facilitate or contribute to the combustion of other materials.

### 5.3 Advice for fire-fighters

The mixture does not present any fire risk; 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) described under Section 8 and follow the advice for safe use and handling given under Section 7.

#### 6.1.2 For emergency responders

No specific emergency procedures are required. However, eyes, skin and respiratory protections are needed in situations with high dust levels.

### 6.2 Environmental precautions

Avoid discharging or dispersing the mixture into drains and/or sewers and/or water bodies (e.g., streams).

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

#### Dry mixture

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

Alternatively, remove the dust by dampening the material and collect it using a broom or mops. If this is not possible, wet the mixture with water (see: wet mixture).

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

Place the spilled material into containers. In case of spills of large amounts of the mixture, close or cover any water reservoirs located in the immediate vicinity.

#### Wet mixture

Remove and collect the mixture in containers, wait for it to dry and harden before disposing of it 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 remove the dry mixture, see Subsection 6.3.

**Measures to prevent fire**

No precautions are necessary since the mixture is neither combustible nor flammable.

**Measures to prevent aerosol and dust generation**

Do not sweep or use compressed air. Use dry cleaning systems (such as, for example, vacuum cleaners or vacuum extractors) that do not cause dust to scatter into the air.

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 mixture, avoid its dispersion into the environment (see also Subsection 6.2)

**7.1.2 Information of a general nature on hygiene in the workplace**

Do not eat or drink in workplaces where the mixture is handled 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**

The mixture must be stored out of reach of children, away from acids, in suitable closed containers (storage silos and bags), in a cool, dry, unventilated location to preserve its technical characteristics, avoiding, in any case, any emission of dust (see Section 10).

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

To prevent engulfment or suffocation risks (during maintenance work and cleaning or unclogging operations) do not enter confined spaces – e.g., silos, hoppers, bulk trucks or other containers and/or vessels that store and contain the mixture – 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 relates solely to the effectiveness of the reducing agent in maintaining the level of soluble chromium VI, determined according to standard EN 196-10, under the limit of 0.0002% of the total dry weight of the ready-to-use mixture, imposed by current legislation (see Subsection 15.1), without prejudice to the limits of use of the product dictated by the general rules of conservation and use of the product itself.

## Section 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters

Please refer to the threshold limit value for the time-weighted average (TLV-TWA), adopted for the workplace by the American Conference of Governmental Industrial Hygienists (ACGIH). For Portland cement particulate it is equal to 1 mg per m<sup>3</sup> (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/m<sup>3</sup>
- 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.

Regarding 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/m<sup>3</sup> (respirable fraction, 8h) VLEP (IT) = 0.1 mg/m<sup>3</sup> (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/m<sup>3</sup>.

### 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 the mixture is handled, transported, loaded, unloaded and stored, suitable health and safety measures must be taken for the protection of workers and to contain the dispersion of dust in the workplace, as shown in the table (evaluated for a DNEL value = 1 mg/m<sup>3</sup>). 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)	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		(#) < 240 min	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 rooms 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 Subsection 1.2.

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

**General:**

Do not eat, drink or smoke while handling the mixture, to avoid contact of the dust with skin or mouth. Remove contaminated clothing, shoes, glasses and clean them thoroughly before using them again.

When handling the mixture, use the PPE specified below. Immediately after handling or working with the mixture or products/preparations containing it, workers should wash thoroughly with neutral soap or mild detergent or apply a moisturizing cream.

**Eye/face protection**



Wear goggles or safety masks certified pursuant to UNI EN 166 when handling the mixture so as to prevent any contact with the eyes.

**Skin protection**



Use gloves with mechanical abrasion resistance according to EN ISO 388 with nitrile, neoprene or polyurethane 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 situations, such as when laying cement, 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 protective equipment, 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/m<sup>3</sup>](#), is 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 Subsection 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 the mixture is handled, transported, loaded, unloaded and stored, suitable measures must be adopted to contain the dispersion of 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 required technical and organizational measures must be adopted to prevent the dispersion and accidental spillage of mixture dust at different stages of production and use, mainly to avoid its drainage into soil, watercourses or sewers.

The environmental impact and the potential danger 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 of the pH.

In any case, any negative effects related to the production and use cycle of the mixture has a localized impact at the site; the pH level of surface water and wastewater should not be above 9.

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

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

- Tier 1: collect information on the pH level of the waste and the contribution of spilled mixture dust to any change; if the pH value is higher than 9 due to the predominant contribution of mixture dust, suitable preventive measures need to be implemented.
- 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 above 9, neutralization actions must be taken at the discharge in order to avoid any environmental impact from dispersion of mixture dust, at different stages of production and use.

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. solid inorganic material in powder form) main particle size 5÷30 µm)*

c) *Odor: odorless*

d) *Melting point/freezing point: Ca(OH)<sub>2</sub> dehydrates into CaO at 580 °C*

*Boiling point or initial boiling point and boiling range: Not applicable*

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 because it is not explosive or pyrotechnic; it is not in itself capable of producing, by chemical reactions, gases at temperatures, pressures, and velocities that would cause damage to the surroundings, nor is it capable of self-sustaining exothermic chemical reactions*

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*  
*p) Density and/or relative density: 2.0-2.2; apparent density: 0.6-1.2 g/cm<sup>3</sup>*  
*q) Relative vapor density: Not applicable*  
*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, the mixture hardens and forms a stable mass that does not react with the environment.

### **10.2 Chemical stability**

The mixture as such is stable, as long as it is stored in an appropriate manner (see Section 7); it must be kept dry, avoiding contact with incompatible materials.

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.

The wet mixture 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, the mixture 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.

### **10.3 Possibility of hazardous reactions**

The mixture does not generate 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, contact of aluminum dust with the wet mixture causes the formation of hydrogen.

### **10.6 Hazardous decomposition products**

The mixture does not decompose into 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 <a href="#">[see Reference (3)]</a> .	(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 animal studies do not provide indications of carcinogenicity which are sufficient to classify the agent with one of the other notations).	(1)  (14)

		Based on the available data, the classification criteria are not 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 mixture dust may aggravate existing respiratory illnesses and/or dysfunctions such as emphysema or asthma and/or existing diseases if the skin and/or eyes.

**11.2 Information on other hazards**

**11.2.1 Endocrine disrupting properties**

Not applicable

**11.2.2 Other information**

Not applicable

**Section 12. ECOLOGICAL INFORMATION**

**12.1 Toxicity**

The mixture 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 the mixture dispersed in water, under certain circumstances there may be possible effects of ecotoxicity to aquatic life due to the consequent increase in pH.

**12.2 Persistence and degradability**

Not relevant since the mixture is an inorganic material; after hardening, there is no risk of toxicity.

**12.3 Bioaccumulation potential**

Not relevant since the mixture is an inorganic material; after hardening, there is no risk of toxicity.

#### **12.4 Mobility in soil**

Not relevant since the mixture is an inorganic material; after hardening, there is no risk of toxicity.

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

Not relevant since the mixture is an inorganic material; after hardening, there is no risk of toxicity.

#### **12.6 Endocrine system disrupting properties**

Not relevant

#### **12.7 Other adverse effects**

Not relevant

### **Section 13. DISPOSAL CONSIDERATIONS**

Pre-mixed cements 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**

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**

The mixture does not fall within any hazard class for the transport of dangerous goods and, therefore, it 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 Safety, health environmental regulations/legislation 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 July 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 197/-1 "Cement - Composition, specifications and conformity criteria for common cements"
- EN 15368 "Hydraulic binder for non-structural applications - Definition, specifications and conformity criteria"
- UNI EN 413-1 "Masonry cement - Part 1: composition, specifications and conformity criteria"
- EN 14216 "Cement - Composition, specifications and conformity criteria for special cements at heat for hydration"
- EN 196/-10 "Test methods for concrete – Part 10: Determination of the content of soluble chromium VI in cement"
- 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 Conference of Governmental Industrial Hygienists (ACGIH) for "respirable crystalline silica" is 0.025 mg/m<sup>3</sup>, 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/m<sup>3</sup> 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"), **at par. 47 of Annex XVII**, as amended by **Regulation 552/2009/EC**, lays out the prohibition to market and sell cement and 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 mixture.

Compliance with this 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).

Pursuant to this Regulation, use of the reducing agent requires communication of the following information:

<b>DATE OF PACKAGING</b>	indicated on the bag or in the delivery note
<b>STORAGE CONDITIONS</b>	in special closed containers, in a cool and dry place with no ventilation, with a guarantee of maintaining the intactness of the package
<b>STORAGE PERIOD (*)</b>	as indicated on the delivery note (for bagged or bulk product) and on each individual bag

(\*) *To maintain the effectiveness of the reducing agent.*

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 and cement mixtures, according to the "REACH" Regulations, are a mixture and, as such, are not subject to 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 no. QJ420702-40).

With regard to Flue dust (CKD and BPD), the Annex outlines the use descriptors of the substance (ref. Chemical Safety Report), related to the identified uses and, in particular, the exposure scenario typically used in the manufacturing cycle of hydraulic binders (ref. e-SDS).

Exposure scenario	Sector of use SU	Product Category PC	Process category PROC	Environmental Release Category ERC
9,1 Industrial manufacture of hydraulic building and construction materials	not applicable	0, 9a, 9b	2, 3, 5, 8b, 9, 14, 26	2

Moreover, if certain substances used in the production of the mixture were subject to registration, the present Safety Data Sheet will be updated appropriately 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. could have a negative impact on a prior 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 ( <a href="#">EC Regulation. 1907/2006</a> )
RPE	Respiratory protective equipment
SCOEL	Scientific Committee on Occupational Exposure Limit Values
SDS	Safety Data Sheet
e-SDS	Extended Safety Data Sheet ( <a href="#">Safety Data Sheet with exposure scenario</a> )
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](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 main trade names of Premixed products are:

Product family	Products
Prontapresa	PRONTAPRESA
Prontapresa	PRONTAPRESA MALTA
Prontapresa	PRONTAPRESA SW
(Prontapresa) ROCKET	ROCKET 200-2H
ECO Premixes	ECO T55
ECO Premixes	ECO T45 (BELCEM T)
ECO Premixes	ECOSPR. GUN.WLT
ECO Premixes	ECOSPRITZ GUNITE WLT/TR
ECO Premixes	ECOSPRITZ GUNITE
CENUPREM	CENUPREM C
CENUPREM	CENUPREM C FIBRORINFORZATO
CENUPREM	CENUPREM M
CENUPREM	CENUPREM N
CENUPREM	CENUPREM F

The table below lists the classification and the 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	On the basis of test data
Skin sensitization 1B	H317	Human experience
Eye injuries 1	H318	On the basis of test data
STOT SE 3	H335	Human experience

The data and test methods used to classify cements and cement mixtures can be found under Subsection 11.1.

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

See Section 2.

### 16.6 Training tips

In addition to training programs on the environment, health and safety for its own workers, the User companies 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 knowledge 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](http://www.buzziunicem.it/schede-sicurezza)*

**CEMENT KILN DUST (CKD) AND BY-PASS DUST (BPD)  
EXPOSURE SCENARIO**

**Exposure Scenario no. 9.1:**  
*Industrial manufacture of hydraulic building and construction materials*

<b>Exposure Scenario addressing uses carried out by workers</b>	
<b>1. Title: Industrial manufacture of hydraulic building and construction materials</b>	
Title	Manufacture of mixtures containing Flue Dust: cement, hydraulic binder, controlled low strength material, concrete (ready-mixed or precast) mortar, grout and other products for building and construction work.
Sector of use	Not applicable
Market sectors	PC 0: Building and construction products PC 9b: Fillers, putties, plasters, modeling clay PC 9a: Coatings and paints, thinners, paint removers
Environmental scenario	ERC 2: Formulation of preparations
Work scenarios	PROC 2: Use in closed and continuous process, with occasional controlled exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 5: Mixing or blending in batch process for the formulation of preparations and articles (contact in different phases and/or significant contact) PROC 8b: Transfer of substance or preparation (filling/emptying) from/to vessels/large containers at dedicated facilities PROC 9: Transfer of a substance or preparation into small containers (dedicated filling line, including weighing) PROC 14: Production of preparations or articles by tableting, compression, extrusion, pelletizing PROC 26: Handling of solid inorganic substances at room temperature
Assessment method	The assessment of inhalation exposure is based on the dustiness/fugacity of the substance, using the exposure estimation tool MEASE. The environmental assessment is based on a qualitative approach, described in the introduction. The relevant parameter is the pH in water and soil.
<b>2. Operational conditions and risk management measures</b>	
<b>2.1 Control of workers' exposure</b>	
<b>Product characteristics</b>	
<p>Hydraulic building and construction materials are inorganic binders. Generally, these products are mixtures of Portland cement clinker and other hydraulic and non-hydraulic constituents.</p> <p>Flue Dust can be part of common cements, like Portland cement. In this main application, <b>the Flue Dust content is less than 5%</b>.</p> <p>In other hydraulic binders, the Flue Dust content could be more than 50%. Generally, the content in a hydraulic mixture is not restricted. Flue Dust is a very dusty substance.</p> <p>In all end uses, the substance will intentionally come into contact with water. In part, the substance reacts with water and forms hydration products. At this stage of a wet or pasty suspension, the product is irritating due to the pH, which is above 11. Instead, the final product hardens (e.g., as mortar, concrete) and is not irritating, since no free alkaline moisture remains.</p>	
<b>Amounts used</b>	
The quantity/year handled during each single work shift is not considered to influence the exposure scenario of the workers. Instead, the combination of the scale of operation (industrial vs. professional) and level of containment and/or automation of the systems (as reflected in the PROC) is the main determinant of the intrinsic dust emission potential of the process.	
<b>Frequency and duration of use/exposure</b>	
Processes	Duration of the exposure
PROC 2, 3, 5, 8b, 9, 14, 26 (all)	no restriction (480 minutes)

Human factors not influenced by risk management					
The breathable volume per shift, during all process phases indicated in the PROCs is assumed to be equal to 10 m <sup>3</sup> /shift (8 hours).					
Other given operational conditions affecting workers' exposure					
Operational conditions, such as process temperature and process pressure, are not considered relevant for occupational exposure assessment of the workers during the production activity.					
Technical conditions and measures at process level (source) to prevent release					
Risk management measures at the process level are generally not required during the work activity.					
Technical conditions and measures to control dispersion from source towards the worker					
Processes	Localized controls (LC)	Efficiency of LC (according to MEASE)	Other information		
PROC 2, 3	General ventilation	17 %	-		
PROC 5, 8b, 9, 14, 26	General local ventilation	78 %	-		
Organizational measures to prevent/limit releases, dispersion and exposure					
Avoid inhalation or ingestion. General workplace hygiene measures are required to ensure a safe handling of the substance. These measures involve good personal and housekeeping practices (i.e., regular cleaning with suitable cleaning equipment), no eating or smoking at the workplace, wearing standard work clothes and shoes unless otherwise stated below. Shower and change clothes at end of work shift. Do not wear contaminated clothing at home and, lastly, do not use compressed air to remove dust.					
Conditions and measures related to personal protection, hygiene and health evaluation					
Processes	Specific respiratory protection equipment (RPE)	RPE efficiency – Assigned Protection Factor (APF)	Indication of gloves	Additional personal protective equipment (PPE)	
PROC 2, 3	Not required	Not applicable	Waterproof, abrasion and alkali resistant gloves, internally lined with cotton. The use of gloves is mandatory since Flue Dust is classified as irritating to skin.	Safety goggles or visors (in accordance with EN 166) are mandatory since Flue Dust is classified as highly irritating to eyes. Additional face protection, protective clothing and safety shoes are required to be worn as appropriate.	
PROC 5, 8b, 9	Mask FF P2	APF = 10			
PROC 14, 26	Mask FF P1	APF = 4			
<p>Gloves and eye protective equipment must be worn, unless potential contact with the skin and eyes can be excluded by the nature and type of application (i.e., closed process).</p> <p>An example of the assigned protection factors (APF) for different respiratory protective equipment (RPE), according to EN 529:2005, can be found in the glossary of MEASE approach.</p> <p>All RPE as defined above must only be worn if the following preventive measures are implemented in parallel: The duration of the work activity (compared to the “duration of exposure” referred to above) should take into account the additional physiological stress for the worker due to the breathing resistance and weight of the RPE itself, due to the increased thermal stress (referred to the head).</p> <p>In addition, it should be taken into account that the worker’s capability of using tools and communicating is reduced while wearing RPE.</p> <p>For the reasons given above, the worker should therefore be: (i) healthy (especially in view of medical problems that may affect the use of RPE), (ii) have facial characteristics suited to reducing leakages between face and mask (in view of scars and hair).</p> <p>The equipment recommended above, which rely on a tight face seal will not provide the required protection unless they fit the contours of the face in a proper and secure manner.</p> <p>Employers and self-employed individuals are responsible for both the issue of personal protective equipment and the management of their proper use at the workplace, and for periodical checks and maintenance. Therefore, they should also define and document suitable training and educational initiatives aimed at workers on the proper use of individual protective equipment.</p>					
2.2 Control of environmental exposure					
Product characteristics					
Hydraulic building and construction materials are inorganic binders. Generally, these products are mixtures of Portland cement clinker and other hydraulic and non-hydraulic constituents.					

<p>Flue Dust can be part of common cements, like Portland cement. In this main application, <b>the Flue Dust content is less than 5%</b>.</p> <p>In other hydraulic binders, the Flue Dust content could be more than 50%. Generally, the content in a hydraulic mixture is not restricted. Flue Dust is a very dusty substance.</p> <p>In all end uses, the substance will intentionally come into contact with water. In part, the substance reacts with water and forms hydration products. At this stage of a wet or pasty suspension, the product is irritating due to the pH, which is above 11. Instead, the final product hardens (e.g., as mortar, concrete) and is not irritating, since no free alkaline moisture remains.</p>				
<b>Amounts used</b>				
The daily and annual quantity per production site (refer to the actual emission source in an industrial setting) is not considered a determining factor for affecting the environmental exposure scenario.				
<b>Frequency and duration of use</b>				
Intermittent (used < 12 times/year for not more than 24 consecutive hours) or continuous use/release.				
<b>Environmental factors not influenced by risk management</b>				
Flow rate of receiving surface water: 18,000 m <sup>3</sup> /d				
<b>Other given operational conditions affecting environmental exposure</b>				
Effluent discharge rate: 2,000 m <sup>3</sup> /d				
<b>Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil</b>				
Risk management measures related to the environment aim to avoid discharging suspensions containing Flue Dust into municipal wastewater or to surface water. In this case, such discharges are expected to cause significant changes in the pH. Therefore, regular control of the pH value during introduction into surface waters is required. Usually, discharges should be carried out so that pH changes in receiving surface waters are minimized (e.g., through neutralization). In general, most aquatic organisms can tolerate pH values in the range of 6-9. This is also reflected in the description of standardized OECD tests with aquatic organisms.				
<b>Organizational measures to prevent/limit release from site</b>				
Training for the workers, based on the Safety Data Sheet (SDS).				
<b>Conditions and measures related to municipal sewage treatment plants</b>				
The pH of the wastewater going into the municipal sewage treatment plant has to be controlled on a regular basis and neutralized if necessary. Solid Flue Dust constituents must be separated from the sewage effluent,				
<b>Conditions and measures related to waste disposal</b>				
Solid industrial waste containing Flue Dust should be reused or disposed of after hardening and/or neutralization.				
<b>3 Exposure estimation</b>				
<b>3.1 Occupational exposure (health)</b>				
<p>The exposure estimation tool MEASE was used to assess the inhalation exposure.</p> <p>The risk characterization ratio (RCR) is the quotient of the refined exposure estimate and the respective DNEL (derived no-effect level). This value has to be below 1 to demonstrate safe use.</p> <p>For inhalation exposure, the RCR is based on DNEL = 1 mg/m<sup>3</sup> (<u>as respirable dust</u>) and the respective inhalation exposure estimate obtained using MEASE (<u>as inhalable dust</u>).</p> <p>In this way, the RCR value includes an additional safety margin, since the respirable fraction is a sub-fraction of the inhalable fraction in accordance with UNI EN 481.</p>				
Processes	Method used for inhalation exposure assessment	Inhalation exposure estimate (RCR)	Method used for dermal exposure assessment	Dermal exposure estimate (RCR)
PROC 2, 3, 5, 8b, 9, 14, 26	MEASE	< 1 mg/m <sup>3</sup> (0.44 - 0.83)	Since Flue Dust is classified as irritating to skin and eyes, dermal exposure has to be minimized as far as technically feasible. A DNEL for dermal effects has not been determined. Therefore, dermal exposure is not assessed in this exposure scenario.	

### 3.2 Environmental emissions

Significant emissions or exposure to air are not expected due to the low vapor pressure of Flue Dust. On the other hand, specific preventive measures are not necessary for terrestrial impact, apart from the proper implementation of ordinary and effective managerial practices, Therefore, these emissions are not deemed relevant for this exposure scenario.

The environmental exposure assessment is only relevant for the aquatic environment as emissions of Flue Dust in the different life-cycle stages (production and use) mainly apply to ground and wastewater.

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 of the pH.

In any case, any negative effect correlated to the manufacturing cycle and use of Flue Dust has a localized impact at the industrial plant. Indeed, the pH level may have a negative impact on the municipal sewage treatment plants (STPs) or industrial wastewater treatment plants (WWTPs). For this assessment, a systematic approach is adopted, bearing in mind that the pH of surface water should not exceed 9.

Environmental emissions	<p>The production of Flue Dust can potentially result in an aquatic emission, whereby locally the pH and the amount of the following ions can be increased in the aquatic environment: <math>K^+</math>, <math>Na^+</math>, <math>Ca^{2+}</math>, <math>Mg^{2+}</math>, <math>SO_4^{2-}</math>, <math>Cl^-</math>.</p> <p>When the pH is not neutralized, the effluent of the production sites may impact the pH of the receiving water. Generally, the pH of the effluents is measured frequently and can be neutralized easily as often as required by national legislation.</p>
Exposure concentration in wastewater treatment plants (WWTP)	<p>Wastewater from Flue Dust production is an inorganic wastewater stream, for which no biological treatment is necessary.</p> <p>Wastewater streams from Flue Dust production sites will normally not be treated in biological wastewater treatment plants (WWTPs) but can be used for pH control of acid wastewater streams that are treated in biological WWTPs.</p>
Exposure concentration in aquatic pelagic compartments	<p>When Flue Dust is emitted to surface water the following happens. Some Flue Dust constituents (sulphate and chloride salts from sodium, potassium, calcium and magnesium) are highly or moderate soluble and will remain in suspension in water.</p> <p>These chloride and sulphate salts are naturally occurring in sea water and groundwater. The amount in groundwater depends on the geological soil formation and varies between different areas.</p> <p>On the other hand, some constituents react with water and form highly insoluble inorganic hydration products.</p> <p>Due to the hydration reaction, the pH of the water may increase, depending on the buffer capacity of the water. The higher the buffer capacity of the water, the lower the effect on pH will be. In general, the buffer capacity preventing shifts in acidity or alkalinity in natural waters is regulated by the equilibrium between carbon dioxide (<math>CO_2</math>), the bicarbonate ion (<math>HCO_3^-</math>) and the carbonate ion (<math>CO_3^{2-}</math>).</p>
Exposure concentration in sediments	<p>A risk assessment for the sediment compartment is considered as not relevant and therefore not included. When Flue Dust is emitted to this compartment the following happens.</p> <p>Some Flue Dust constituents are inert and insoluble (calcite, quartz, clay minerals), they are naturally occurring minerals and will have no impact on the sediment.</p> <p>On the other hand, some constituents react with water and form highly insoluble inorganic hydration products. Moreover, these products have no bio-accumulation potential.</p> <p>Other constituents are highly soluble and will remain in suspension in water.</p>
Exposure concentrations in soil and groundwater	<p>When Flue Dust is emitted to the soil and groundwater compartments the following happens.</p> <p>Some Flue Dust constituents are inert and insoluble (calcite, quartz, clay minerals), moreover, they are naturally occurring minerals and will have no impact on the soil.</p> <p>Instead, other Flue Dust constituents (sulphate and chloride salts from sodium, potassium, calcium and magnesium) are moderate or highly soluble and will remain in groundwater.</p> <p>These chloride and sulphate salts are naturally occurring in sea water and ground water. The amount in groundwater depends on the geological soil formation and is therefore variable.</p> <p>Other constituents react with water and form highly insoluble inorganic hydration products.</p> <p>Due to the hydration reaction, the pH of the groundwater may increase, depending on the buffer capacity of the groundwater. The higher the buffer capacity of the groundwater, the lower the effect on pH will be. In general, the buffer capacity preventing shifts in acidity or alkalinity in natural waters is regulated by the equilibrium between carbon dioxide (<math>CO_2</math>), the bicarbonate ion (<math>HCO_3^-</math>) and the carbonate ion (<math>CO_3^{2-}</math>).</p>

Exposure concentration in atmospheric compartment	<p>A risk assessment for the air compartment is considered as not relevant and therefore not included. When Flue Dust particles are emitted to air, they will sediment or washed out by rain in a reasonably short time frame.</p> <p>In this way, the atmospheric emissions end up in soil and water.</p>
Exposure concentration relevant for the food chain (secondary poisoning)	<p>A risk assessment for secondary poisoning is not required, since bio-accumulation in organisms is not relevant for Flue Dust, which is an inorganic substance.</p>
<p><b>4 Guidance for the DU (downstream user) to evaluate whether they are working inside the boundaries set out by the ES</b></p>	
<p><b>Occupational exposure (health)</b></p>	
<p>A DU works inside the boundaries set by the ES if either the proposed risk management measures as described above are met or the downstream user can demonstrate on their own that their operational conditions and implemented technical-organizational measures for risk management are adequate and efficient.</p> <p>This must be supported by the actual guarantee that the exposure respects the limit set out according to the processes and/or activities identified by the PROCs (listed under Section 1), with a DNEL inhalation of 1 mg/m<sup>3</sup> (as respirable dust). If measured data is not available, the DU may make use of an appropriate scaling tool such as MEASE (<a href="http://www.ebrc.de/mease.html">www.ebrc.de/mease.html</a>) to estimate the working exposure associated with the inhalable fraction.</p> <p><u>Important note:</u> The DU must be aware of the fact that, apart from the long-term DNEL (given above for respirable dust), a DNEL for acute effects also exists at a limit value equal to 4 mg/m<sup>3</sup>.</p> <p>By demonstrating a safe use when comparing exposure estimates with the long-term DNEL, the acute DNEL is therefore also complied with (according to <i>R.14 guidance, acute exposure levels can be derived by multiplying long-term exposure estimates by a factor of 2</i>).</p> <p>Please note that if the MEASE is used to calculate workers' exposure (referred to the inhalable fraction), the exposure duration should only be reduced to half-shift as a risk management measure (leading to an exposure reduction of 40 %)</p>	
<p><b>Environmental exposure</b></p>	
<p>For assessment of the exposure, a systematic approach is recommended:</p> <ul style="list-style-type: none"> <li>- Tier 1: collect information on effluent pH and the contribution of flue dust to any change; if the pH is above 9 due to the predominant contribution of flue dust, suitable preventive measures need to be adopted.</li> <li>- Tier 2: collect information on receiving water pH after the discharge point; the pH must not exceed the value of 9.</li> <li>- Tier 3: sample and measure the pH in the receiving water, after the discharge point. If the pH is below 9, safe use is reasonably demonstrated, and the ES ends here. If the pH is found to be above 9, risk management measures have to be implemented: the effluent has to undergo neutralization, thereby avoiding any environmental impacts arising from the dispersion of flue dust during production or use phase.</li> </ul>	