

SAFETY DATA SHEET FOR HYDRAULIC BINDER FOR STABILIZATION			
Date of issue	20/04/2024	Date of change	01/02/2025
Edition	First	Modification	2.6
Format	The format complies with EU REGULATION № 830/2015, issued by the Commission on the 28 th of May 2015 with regards to the amendment of European Parliament and Council Regulation (EC) № 1907/2006 on the registration, evaluation, authorization and restriction of chemicals (REACH)		

1. IDENTIFICATION OF SUBSTANCE/MIXTURE AND COMPANY/ENTERPRISE

1.1. Product identifiers

Products manufactured by Heidelberg Materials Devnya JSC

Product name	UFI
Hydraulic binding substance for roads HRB E3	Y30A-N4QV-XX0Q-7KM4
Special hydraulic binder for stabilization CONTACT	RC0A-54T2-VX06-7MCA
Special hydraulic binder for stabilization CONTACT PLUS 30	VE0A-P4GG-5X0P-VXXD
Special hydraulic binder for stabilization CONTACT PLUS 50	NH0A-645V-GX06-J9HF

Products manufactured by Heidelberg Materials Vulkan JSC

Product name	UFI
Hydraulic binding substance for roads HRB E2	17CH-0PT0-ED11-2QEF
Hydraulic binding substance for roads HRB E4	K9CH-HPGD-QD1J-Q20H
Special hydraulic binder for stabilization CONTACT	RTCH-JPMS-JD1H-P3GW
Special hydraulic binder for stabilization CONTACT PLUS 30	PWCH-2PA5-VD10-CF2Y
Special hydraulic binder for stabilization CONTACT PLUS 50	50DH-KP0K-5D1G-0SP1

1.2. Identified major applications of the substance or mixture and applications that are not recommended

Hydraulic Road Binders (HRB) and Special Hydraulic Binders (SHB) for stabilization are factory manufactured finished products which are delivered ready for use. They come in the form of a fine gray or white (beige) powder and have specific properties that make them suitable for the processing of materials intended for foundations, sub-foundations, capping layers and earth embankments along roads, railways, airports and other types of infrastructure.

They are mainly used for the stabilization and improvement of soil, base layers of road surfaces and cold recycling of compromised road pavements.

Any applications other than the ones referred to hereinabove are not recommended.

1.3. Detailed information about the issuer of the Safety Data Sheet

Name	Heidelberg Materials Devnya JSC	Heidelberg Materials Vulkan JSC
Address:	9160, Devnya Industrial zona	6401, Dimitrovgrad, Vulkan District
Phone numbers:	+359 519 97 831	+359 391 68 412
Website:	www.heidelbergmaterials.bg	
E-mail:	✓ Occupational safety and health conditions and environment: BGR.HSE@heidelbergmaterials.com ✓ Quality: BGR.quality@heidelbergmaterials.com	

1.4. Emergency phone number:

Organization name:	<u>National Toxicology Center, Sofia</u>	<u>University General Hospital for Active Treatment and Emergency Medicine "N. I. Pirogov", Sofia</u>	<u>Heidelberg Materials Devnya JSC</u> <u>Heidelberg Materials Vulkan JSC</u>
Emergency phone number:	<u>+359 2 9154 233</u>	<u>+359 2 9154 213</u>	<u>+359 (5199) 7331 112</u>
Office hours:	<u>24 hours a day / 7 days a week</u>	<u>8 - 16 ч / 7 days a week</u>	<u>8:00 – 17:00 / in working days</u> The information provided is limited to: ✓ <u>First aid; or</u> ✓ <u>Reference to the nearest Toxicology Center</u>
Is this phone number reachable after office hours?	<u>Yes</u>	<u>Yes</u>	<u>No</u>
E-mail:	<u>poison_centre@mail.orbitel.bg</u>	<u>http://www.pirogov.bg</u>	<u>BGR.HSE@heidelbergmaterials.com</u> <u>BGR.quality@heidelbergmaterials.com</u>

The information can be provided in Bulgarian, English and Romanian.


2. DESCRIPTION OF HAZARDS

2.1. Substance or mixture classification

2.1.1. Classification according to EU Regulation No. 1272/2008

Hazard class	Hazard category	Hazard warnings
Skin irritation	2	H315: Causes skin irritation
Eye damage/irritation	1	H318: Causes serious eye damage
Skin sensitization	1B	H317: May cause an allergic skin reaction
Harmful if swallowed		H302: Harmful if swallowed
Organ-specific toxicity in the event of single exposure respiratory tract irritation STOT SE 3	3	H335: May cause irritation of the respiratory tract

2.2. Label elements

According to EU Regulation № 1272/2008 (CLP)													
Hazard pictograms Corrosive Attention <i>Signal word: Hazard</i>													
Hazard warnings	<table border="1"> <tbody> <tr> <td>H318</td> <td>Causes serious eye damage</td> </tr> <tr> <td>H315</td> <td>Causes skin irritation</td> </tr> <tr> <td>H317</td> <td>May cause an allergic skin reaction</td> </tr> <tr> <td>H302</td> <td>Harmful if swallowed</td> </tr> <tr> <td>H335</td> <td>May cause irritation of the respiratory tract</td> </tr> </tbody> </table>	H318	Causes serious eye damage	H315	Causes skin irritation	H317	May cause an allergic skin reaction	H302	Harmful if swallowed	H335	May cause irritation of the respiratory tract		
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Additional information

When in contact with the skin, wet HRB and SHB for stabilization may cause irritation, dermatitis or burns. They are capable of damaging aluminum or other base metals.

2.2. Other hazards

HRB and SHB for stabilization do not meet the criteria for PBT or vPvB as per Annex XIII to REACH (Regulation (EC) No. 1907/2006).

The dust produced by HRB/SHB for stabilization can cause irritation to the respiratory system. HRB/SHB for stabilization reaction with water produces high alkaline solution. Due to its high alkalinity, the wet mixture may cause skin and eye irritation.

The content of soluble hexavalent chromium can cause an allergic reaction in some people.

3. COMPOSITION / INFORMATION ABOUT INGREDIENTS

3.1. Substances – not applicable, for the product is a mixture, and not a substance.

3.2. Mixtures – HRB is produced according to BDS EN 13282-1 "Quickly adhesive hydraulic binders. Composition, requirements and compliance criteria." and SHB for stabilization correspond to BTO 19.3C/2024.

Hydraulic binders are composite mixtures derived from clinker, air binders and inorganic mineral ingredients.

Composition	Weight %	EINECS EC №	CAS	REACH – Registration №	Classification according to (EU) 1272/2008	
Portland cement clinker	15-64	266-043-4	65997-15-1	Exempt from registration	Skin irritation 2 Skin sensitization 1 B Serious eye damage/irritation STOT SE 3	H315 H317 H318 H335
Dust from clinker kilns	0-70	270-659-9	68475-76-3	01-2119486767-17-0071	Skin irritation 2 Skin sensitization 1 B Serious eye damage/irritation STOT SE 3	H315 H317 H318 H335
Air binding substance	0-22	215-138-9	1305-78-8		Serious eye damage/irritation Skin irritation 2 STOT SE 3 Harmful if swallowed	H318 H315 H335 H302

“Dust from clinker kilns” is a substance (UVCB) generated from the production of cement clinker. It is also known as cement kiln dust, bypass dust, bypass flour, filter dust and clinker dust.

4. FIRST AID MEASURES

4.1. Description of first aid measures

General notes

No protective gear is required for the people providing first aid. First aid workers should avoid contact with HRB solution or humid SHB for stabilization.

Following inhalation

Move the injured person to a place with fresh air and place him/her in a position that will facilitate his/her breathing. Any dust in both the throat and the nasal cavity should be spontaneously cleaned. Get in touch with a doctor in the event of persistent irritation, discomfort, coughing or other symptoms.

After skin contact

In case of HRB or SHB for stabilization in dry state, remove them from the skin and rinse thoroughly with water. For HRB solutions and humid SHB for stabilization, wash the skin with plenty of water.

Remove contaminated clothing, shoes, watches, etc. and clean/wash meticulously before reuse. Seek medical help in all cases of irritation or burns.

After eye contact

Do not rub the eyes in order to avoid mechanical damage to the cornea.

Rinse gently with water for several minutes. Remove contact lenses, if present and to the extent possible. Tilt the head in the direction of the affected eye, open the eyelids wide and flush the eyes. Keep on flushing with plenty of clean water for at least 20 minutes so as to wash away all particles. Avoid solid particles being washed away into the affected eye. If possible, use isotonic water (0.9 % NaCl). Contact an occupational health expert or an eye specialist.

After swallowing

Do not induce vomiting. If the victim is conscious, rinse the mouth with water and give him/her plenty of water to drink. Promptly seek medical aid or contact the Emergency Medical Center of the Toxicology Clinic.

4.2. Most important acute and delayed symptoms and effects

Eyes: Eye contact with HRB or SHB for stabilization may cause serious and potentially irreversible damages.

Skin: After prolonged contact the products may have an irritating effect on wet skin (due to perspiration or moisture) or could cause contact dermatitis as a result of multiple skin contacts.

The lengthy contact of HRB or SHB for stabilization with moisture skin can cause serious burns because they develop without any pain feeling (e.g.: when kneeling in a wet solution even while wearing trousers).

Inhalation: The repeated inhalation of product dust over a long period of time increases the risk of developing lung diseases.

Environment: If used under normal conditions, the product is not dangerous for the environment.

4.3. Instructions on the need of emergency medical attention and special treatment

When seeing a doctor, bring this Safety Data Sheet with you.

5. FIREFIGHTING MEASURES

5.1. Fire extinguishing agents

HRB and SHB for stabilization are not flammable.

5.2. Special hazards arising from the substance or mixture

HRB and SHB for stabilization are non-combustible, non-explosive and do not support or accelerate the combustion of other materials.

5.3. Tips for firefighters

HRB and SHB for stabilization are non-flammable and do not require the firefighters to wear any special gear or equipment.

6. MEASURES TO BE TAKEN IN THE EVENT OF EMERGENCY RELEASE

6.1. Personal precautions, protective equipment, and emergency procedures

6.1.1. Staff not in charge of emergency situations

Wear the protective clothing described in Section 8 and follow the instructions for safe handling and use stated in Section 7.

6.1.2. Staff responsible for emergency situations

No emergency measures or procedures are required.
Nevertheless, respiratory protection shall be needed in an environment with high concentrations of dust.

6.2. Environmental precautions

When washing, water from HRB and SHB for stabilization must not enter sewer networks, drainage systems and water bodies (e.g. rivers, dams, etc.).

6.3. Methods and materials for contamination containment and cleanup

If feasible, collect the spilled material in dry state.

Dry products

Use cleaning methods such as vacuum cleaning/removal (industrial portable vacuum cleaners equipped with high efficiency filters (EPA and HEPA filter, EN 1822-1) or equivalent equipment and technology) that do not cause dispersion of dust in the air.

Never use compressed air.

Alternatively, wipe with a damp cloth or use a hose with a nozzle/tip (fine spray to avoid blowing dust into the air with a strong directional jet) and remove the slurry resulting from the water spraying.

Should this prove to be impossible, you may use water to remove the slurry (see HRB solution). Where wet cleaning or vacuuming/vacuum cleaning is not possible and only dry brushing is workable, make sure the workers are wearing appropriate personal protective equipment and try to restrict the spreading of dust.

Avoid dust inhalation and skin contact. Collect the spilled material in a container for future use. Cure it before treatment in observance of the instructions written in Section 13.

Wet HRB/solution

Clean the solution and put it in a container. Allow the material to dry and harden prior to its treatment in accordance with the guidelines of Section 13.

6.4. Reference to other sections

For more details, please see Section 8 and Section 13.

7. HANDLING AND STORAGE

7.1. Precautions for safe work

7.1.1. Protective measures

Follow the recommendations stated in Section 8.
The cleaning of HRB or SHB for stabilization is described in Sub-Section 6.3.

Fire safety measures

Not applicable.

Measures aimed at preventing dust and aerosol emissions

Don't sweep! Use dry cleaning methods such as industrial vacuum cleaners and vacuum extractors which do not cause airborne dispersion.

For more information, read the instructions in the Good Practices Manual. These good practices have been adopted pursuant to the social dialogue titled "Agreement on the protection of workers' health through good management, the use of crystalline silica and the products containing it". Participants in the social dialogue are employees and managers of European sector associations, including Cembureau. Safe operating practices can be found by clicking on the following link: <https://nepsi.eu/documents/home/>.

Environmental protection measures

No special measures.

7.1.2. Information about general hygiene at the workplace

Do not store or use HRB or SHB for stabilization near foods and beverages and do not smoke while working. In dusty environments, wear a mask and safety goggles. Use protective gloves to avoid skin contact.

7.2. Conditions for safe storage, including incompatibilities

HRB or SHB for stabilization in bulk should be stored in clean and pollution-proof silos which must be dry, waterproof and with minimized internal condensation.

Danger of drowning: To avoid drowning and suffocation, take appropriate safety measures before entering into confined spaces such as silos, bunkers, tanks or other containers and transport means that store or contain the products. HRB and SHB for stabilization may stick to and accumulate on the walls of an enclosure or they could suddenly collapse, fall or leak.

Packaged products should be stored in closed bags, insulated from the floor, in a cool and dry place protected from strong drafts in order to avoid quality deterioration. Bags should be well stacked on top of each other in a stable condition.

Given the materials' incompatibility, do not use aluminum containers to store and transport wet mixtures.

For HRBs containing chromium-reducing agents, the effectiveness of the reducing agent decreases over time. In the case of improper storage (moisture penetration) or expiration date, the reducing agents may lose their effectiveness, and a sensitizing effect should not be excluded in the event of skin contact.

7.3. Specific end use

There is no further information on specific use (see Section 1.2)

8. EXPOSURE CONTROL/PERSONAL PROTECTIVE EQUIPMENT

8.1. Parameter control

According to Ordinance № 13/30.12.2003 on workers' protection from risks associated with exposure to chemical agents at work, the exposure limit value of the air in the working environment for cement is 8 mg/m³ of inhalable fraction.

The exposure values in the air of SHB for stabilization working environment are not limited in Ordinance № 13/30.12.2003 on workers' protection from risks associated with exposure to chemical agents at work.

Based on item 3 "COMPOSITION/INFORMATION ON INGREDIENTS", the limit values of dust from cement clinker kilns refer to the limit values specified in the aforementioned Ordinance for insoluble dust containing less than 2 % free crystalline silica in the respirable fraction (not containing fibrous particles):

Inhalable fraction – 10,0 mg/m³

Breathable fraction – 4,0 mg/m³

Pursuant to Ordinance № 10/26.09.2003 on workers' protection from risks associated with occupational exposure to carcinogens and mutagens, the occupational exposure limit value for breathable free crystalline silica dust is 0,1 mg/m³.

8.1. Exposure control

For each individual PROC*, the users may choose from the table below either option A) or option B), depending on what will be the most appropriate measure in the particular situation. Where a certain option has been selected, it will have to be picked up from the table in Section 8.2.2 "Personal protective measures such as personal protective equipment" - Specification of respiratory protective gear. The only possible combination is between A) – A) and B) – B).

8.2.1. Appropriate technical control

The measures aimed at reducing the accumulation of dust in the environment include dust removal, suction ventilation and dry cleaning methods that do not lead to air dispersion.

Use	PROC*	Exposure	Localized control	Effectiveness
Industrial manufacturing / production of hydraulic binding construction materials	2, 3	The duration is not limited (up to 480 minutes per shift, 5 days a week)	Not required	-
	14, 26		A) not required or B) local ventilation	- 78 %
	5, 8b, 9		A) general ventilation or B) local ventilation	17 % 78 %
Industrial use of wet suspension of hydraulic binding construction materials	7		A) not required or B) local ventilation	- 78 %
	2, 5, 8b, 9, 10, 13, 14		Not required	-
Professional use of dry hydraulic binding construction materials (outdoor and indoor)	2		Not required	-
	9, 26		A) not required or B) general local ventilation	- 72 %
	5, 8a, 8b, 14		A) not required or B) integrated local ventilation	- 87 %
	19		Localized control is not applicable, for the process is carried out only in a well-ventilated premise or outdoors	-
Professional use of wet suspension of hydraulic binding construction materials	11		A) not required or B) general local exhaust ventilation	- 72 %
	2, 5, 8a, 8b, 9, 10, 13, 14, 19		Not required	-
Industrial use of dry hydraulic binding construction materials (outdoor and indoor)	2		Not required	-
	14, 22, 26	A) not required or B) local ventilation	- 78 %	
	5, 8b, 9	A) not required or B) local ventilation	17 % 78 %	

8.2.2. Individual protection measures - personal protective clothing/equipment

General requirements:

If possible, try not to kneel in the products when working. Where kneeling cannot be avoided, use appropriate impermeable personal protective equipment (special protective clothing).

In order to avoid skin or mouth contact, do not eat, drink or smoke when handling HRB and SHB for stabilization.

Before starting to work with HRB and SHB for stabilization, apply a protective cream and reapply according to the cream manufacturer's instructions.

Immediately after finishing working with HRB and SHB for stabilization, the workers should wash, shower and use skin moisturizers.

Remove contaminated clothes, shoes, watches, etc., and clean thoroughly before using them again.

Eye/face protection



In order to prevent eye contact while handling HRB and SHB for stabilization, please use protective goggles approved under EN 166.

Skin protection



In the event of prolonged contact with HRB and SHB for stabilization, please wear waterproof, abrasive and alkaline resistant gloves (e.g. CE-marked nitrile-coated cotton gloves) with a cotton inner lining, as well as safety shoes or boots, closed protective clothing with long sleeves, and skin protective creams. Make sure the products do not penetrate the shoes/boots.

As for the gloves, studies have shown that nitrile-impregnated cotton gloves (with layer thickness of around 0,15 mm) provide sufficient protection for a period of 480 minutes under normal wear and tear, depending on the task performed. Damaged or wet gloves should be replaced immediately. Always have spare gloves ready to be used.

The use of waterproof trousers and knee pads is recommended in certain cases.

Respiratory protection



When a person is potentially exposed to dust levels that exceed the permissible limit values, he/she should use appropriate respiratory protection adapted to the respective dust level and meeting the requirements of EN 149 or the national standards.

Thermal hazard: Not applicable.

Use	PROC*	Exposure	Specification of Personal Protective Equipment (PPE) for respiratory protection	PPE for respiratory protection – Protection factor (APF)
Industrial manufacturing / production of hydraulic binding construction materials	2, 3	The duration is not limited (up to 480 minutes per shift, 5 days a week)	Not required	-
	14, 26		A) FFP1 or B) not required	APF = 4 -
	5, 8b, 9		A) FFP2 or B) FFP1	APF = 10 APF = 4
Industrial use of dry hydraulic binding construction materials (outdoor and indoor)	2		Not required	-
	14, 22, 26		A) FFP1 or B) not required	APF = 4 -
	5, 8b, 9		A) FFP2 or B) FFP1	APF = 10 APF = 4
Industrial use of wet suspension of hydraulic binding construction materials	7		A) FFP1 or B) not required	APF = 4 -
	2, 5, 8b, 9, 10, 13, 14		Not required	-
Professional use of wet suspension of hydraulic binding construction materials	11		A) FFP2 or B) FFP1	APF = 10 APF = 4
	2, 5, 8a, 8b, 9, 10, 13, 14, 19		Not required	-
Professional use of dry hydraulic binding construction materials (outdoor and indoor)	2		FFP1	APF = 4
	9, 26		A) FFP2 or B) FFP1	APF = 10 APF = 4
	5, 8a, 8b, 14	A) FFP3 or B) FFP1	APF = 20 APF = 4	
	19	FFP2	APF = 10	

*PROC are the identified applications described in Section 16.2.

An overview of APFs according to the protection class of various PPE for respiratory protection (according to EN 529:2005) can be found in Mease's glossary (16). Each PPE referred to hereinabove shall only be worn if it meets the following principles applied in parallel: The duration of work (as compared to the aforementioned „exposure duration”) should reflect the additional physiological strain suffered by the worker as a result of breathing resistance, the PPE weight, and the increased heat stress when covering the respiratory organs.

Furthermore, the worker's ability to use communication tools is considered to be reduced while he/she is wearing PPE for respiratory protection. Due to the reasons stated hereinabove, the worker should be healthy (especially in view of the medical issues that may arise from the use of respiratory PPE) and should have suitable facial features (in terms of scars and facial hair) so as to reduce the penetration of air between the face and the mask.

Recommended PPE with a good face sealing will not provide the necessary protection, unless it properly and securely conforms to the facial contours.

Employers and self-employed individuals are legally required to maintain and provide respiratory PPE and manage its proper use on the workplace. Therefore, they must establish and document an appropriate respiratory protection policy, including workers' training.

8.2.3. Environmental exposure control

The release of emissions into the environment shall be controlled in accordance with the available technologies and norms for emissions of general dust particles.

Air: Air emissions shall be controlled in accordance with the available technologies and norms for emissions of general dust particles stipulated in the applicable legislation.

Water: In order to avoid high (alkaline) pH, never pour HRB and SHB for stabilization into sewers, waterways or bodies of water. A pH above 9 could have a negative eco-toxicological impact.

Soil and subsoil: No special emission control measures are required for exposure to terrestrial environment.

For additional information, please see Section 6 "Measures taken in the event of emergency release".

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

	HRB in dry state	SHB for stabilization in dry state
Appearance:	The dry hydraulic binder is a solid inorganic material that has been finely ground (gray or white dust). Size of main particles: 5-30 µm	Inorganic powder materials. Depending on composition (UVC substance), their color may vary between beige and gray
Odor: no odor: Odor threshold value:	no odor no value, no odor	
pH: (T = 20°C in water, water-solid ratio 1:2):	11-13,5	approximately 12-13, strongly dependent on the composition of UVCB substance in the intake;
Melting point:	> 1 200 °C	> 850 °C
Initial boiling point and range:	not applicable, under normal atmospheric conditions; melting point > 1250°C	not applicable, under normal atmospheric conditions; melting point > 850°C
Flash point:	not applicable because the material is not a liquid	
Evaporation rate:	not applicable because the material is not a liquid	
Flammability (solid, gas):	not applicable; the material is a non-flammable solid substance that does not cause or support fire	
Upper/lower limits of flammability and explosiveness:	not applicable because the material is not a flammable gas	
Vapor pressure:	not applicable, melting point > 1250 °C	not applicable, melting point > 850 °C
Vapor density:	not applicable, melting point > 1250 °C	not applicable, melting point > 850 °C
Relative density:	2.7-3.2 ; Bulk density: 0.8-1.5 g/sm ³	2.7 - 3.2 ; Visible density: 0.9 - 1.5 g/sm ³
Water solubility: (T = 20 °C):	light (0.1-1.5 g/l)	around 0.1-100 g/l, strongly dependent on the composition of UVCB substance in the intake;
Separation ratio: n-octanol/water:	not applicable because the material is an inorganic substance	
Auto-ignition temperature:	not applicable (the material does not self-ignite, for it is not an organo-metallic, organo-metalloid or organo-phosphine compound or a derivative thereof and does not contain other self-igniting substances);	
Decomposition temperature:	not applicable if organic peroxide is not present	
Viscosity:	not applicable because the material is not a liquid	
Explosive properties:	Not applicable. Not an explosive or pyrotechnic material. Cannot produce gas by itself through chemical reaction at a temperature and pressure and at a rate that would cause damage to the surrounding environment. Cannot sustain an exothermic chemical reaction by itself.	
Oxidizing properties:	not applicable, because the material cannot cause or contribute to the ignition of other materials.	

9.2. Other information

Not applicable

9.2.1. Information about classification against basic physical properties

Not applicable

9.2.2. Other safety features

Not applicable

10. STABILITY AND REACTIVITY

10.1. Reactivity

When mixed with water, HRB and SHB for stabilization solidify into a stable mass that is not capable of producing reaction in a normal environment.

10.2. Chemical stability

If properly stored (see Section 7), HRB and SHB for stabilization are stable and compatible with most other construction materials. They must be kept in a dry place. Avoid contact with incompatible materials.

Wet HRB and humid SHB for stabilization are alkaline and incompatible with acids, ammonium salts, aluminum or other base metals. The products dissolve in hydrofluoric acid and produce a corrosive silicon tetrafluoride gas. Avoid contact with these incompatible materials. HRB and SHB for stabilization react with water to form silicates and calcium hydroxide. The silicates contained in HRB and SHB for stabilization react with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride.

10.3. Potential for dangerous reactions

HRB and SHB for stabilization do not cause dangerous reactions.

10.4. Conditions that should be avoided

The presence of moisture during the storage of HRB and SHB for stabilization can cause clumping and loss of product qualities.

10.5. Incompatible materials

Acids, ammonium salts, aluminum and other base metals.

Contact with acids may provoke exothermic reactions. The uncontrolled use of aluminum powder in HRB solution is to be avoided because it results in the release of hydrogen.

10.6. Hazardous decomposition products:

HRB and SHB for stabilization do not decompose into other hazardous products.

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Hazard class	Category	Effect	Reference
Acute toxicity - dermal	-	Test performed on rabbit; 24-hour contact; 2 000 mg/kg body weight – no lethality. Based on available data, it does not meet the classification criteria.	(2)
Acute toxicity - inhalation	-	No acute inhalation toxicity has been observed. Based on available data, it does not meet the classification criteria.	(9)
Acute toxicity - oral	-	No indication of ingestion toxicity from tests with cement dust. Based on available data, it does not meet the classification criteria.	Research of scientific literature
Skin corrosion/ irritation	2	When in contact with wet skin, it may cause skin roughening and cracking. Prolonged contact may cause severe burns. If exposed to wet cement dust, some people may develop eczema as a result of high pH that causes irritant contact dermatitis.	(2) Human experiment
Serious eye damage/ irritation	1	Portland cement clinker causes a mixed picture of effect on the cornea and produces an irritation index of 128. HRB and SHB for stabilization contains different amounts of Portland cement clinker, limestone, flying silica ash, granulated blast furnace slag, gypsum, and reducing agent - ferrous sulfate and grinding additive. Direct contact may mechanically damage the cornea, resulting in immediate or delayed inflammation and irritation. Direct contact with large quantities of dry cement or splashes of wet cement can cause various eye irritations (e.g. conjunctivitis or blepharitis), chemical burns and blindness.	(10), (11)
Skin sensitization	1B	After being in contact with wet HRB and SHB for stabilization, some individuals may develop eczema triggered by the reaction to soluble Cr (VI), which may provoke contact dermatitis after prolonged contact. Symptoms could be in different forms - from a mild rash to acute dermatitis. If HRB and SHB for stabilization contains a reducing agent for soluble chromium Cr (VI) and its shelf life has not yet expired, one should not expect any sensitization effect [Reference (3)]. The package label does not have to make a reference to H317.	(3), (4), (17), (18)
Respiratory sensitization	-	There are no indications of respiratory system sensitization. Based on available data, it does not meet the classification criteria.	(1)
Germ cell mutagenicity	-	No indications. Based on available data, it does not meet the classification criteria.	(12), (13)
Carcinogenicity	-	No link has been established between Portland cement exposure and cancer. Epidemiological sources do not confirm the presence of carcinogenicity in humans caused by Portland cement. Portland cement is not classified as carcinogenic to humans (According to ACGIH A4: Agents that are suspected of being carcinogenic to humans but cannot be definitively evaluated due to lack of data. In vitro	(1) (14)

		or animal tests do not indicate carcinogenicity, which is why the product is not classified under any of the other categories). Based on available data, it does not meet the classification criteria.	
Reproductive toxicity	-	Based on available data, it does not meet the classification criteria.	No data on human trials
STOT (CTOO)- Specific Target Organ Toxicity: single exposure	3	HRB and SHB for stabilization can irritate the throat and the respiratory system. Coughing, sneezing and shortness of breath may occur after prolonged exposure at limit values above the threshold. Overall, the evidence clearly indicates that occupational exposure to HRB and SHB for stabilization leads to deficit in the respiratory function. Available evidence, however, is insufficient to establish with certainty the dose-response relationship for these effects.	(1)
STOT-Specific Target Organ Toxicity: repeated exposure	-	Long-term exposure to cement dust above the occupational exposure limit can result in coughing, shortness of breath and chronic obstructive changes in the respiratory tract. Chronic effects have not been observed at low concentrations. Based on available data, it does not meet the classification criteria	(15)
Inhalation hazard	-	Not applicable since it is not used as aerosol.	

Worse medical condition after exposure

Inhalation of dust from products may aggravate existing problems in the respiratory system and/or affect the health condition. It could lead to the development of diseases such as emphysema, asthma, skin and/or eye issues.

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

Not applicable.

11.2.2. Other information

Not applicable.

12. ENVIRONMENTAL INFORMATION

12.1. Toxicity

The product is not dangerous for the environment. Eco-toxicological tests with Portland cement carried out on water fleas (5) and *Selenastrum coli* (6) reveal a weak toxicological effect. Therefore, LC50 and EC50 values cannot be determined (7). There is no indication of toxicity in the precipitation phase (8). Nevertheless, the adding of large amounts of compounds in water can cause the pH to rise, which could make these compounds toxic to aquatic organisms under certain circumstances.

12.2. Sustainability and degradability

Not applicable. The product poses no toxic risks after curing.

12.3. Bio-accumulative capacity

Not applicable. The product poses no toxic risks after curing.

12.4. Transportability in soil

Not applicable. The product poses no toxic risks after curing.

12.5. Results from PBT and vPvB-assessments (bio-accumulative and toxic substances)

Not applicable. The product poses no toxic risks after curing.

12.6. Properties affecting the endocrine system

Not applicable.

12.7. Other adverse effects:

Not applicable.

13. WASTE DISPOSAL

13.1. Waste processing methods

13.1.1. Product/packaging disposal

Do not dispose into drains or water bodies.

Product – HRB and SHB for stabilization with expired shelf life

(EWC) European Waste Catalogue: code: 10 13 99 - Waste not specified elsewhere. When proven to contain more than 0.0002 % soluble chromium Cr (VI), it should not be used or sold, unless applied in controlled, closed and fully automated processes. Otherwise, it shall be recycled or treated according to the local legislation, or processed again with a reducing agent.

Product – HRB as residue from operations or dry spilling

(EWC) European Waste Catalogue: code: 10 13 06 - dust particles and dust (except for code 10 13 12 and code 10 13 13). Collect the dry and unused HRB in its present state. Label the container and, if possible, use it again depending on storage time and exposure to dust levels. If the product is to be processed as waste, cure it with water and treat according to “Product - after addition of water – cured”.

Product-slurry

Allow it to harden and make sure it does not flow into sewers, waters and water bodies (e.g. rivers). Treat according to “Product - after addition of water – cured”.

Product - after addition of water – cured

Process the product in observance of the local regulations. It must not get into the sewage network or the water supply system. Treat the hardened product as concrete waste. Concrete waste is not dangerous because of its inertization.

(EWC) European Waste Catalogue: code: 10 13 14 - waste concrete and sediments or code: 17 01 01 - concrete (from construction and demolition).

Packaging

Empty the packaging completely and dispose of according to local legislation.

(EWC) European Waste Catalogue: code: 15 01 02 - plastic packaging.

14. TRANSPORT INFORMATION

HRB and SHB for stabilization are not included in the international regulations applicable to the transport of dangerous goods and cargo (IMDG, IATA, ADR/RID), and they do not require any classification. Apart from the precautions listed in Section 8, no other safety measures shall be needed.

14.1. Number under the UN list

Not applicable.

14.2. Exact name of the consignment under the UN list

Not applicable.

14.3. Transport hazard classes

Not applicable.

14.4 Packing group

Not applicable.

14.5. Environmental hazards

Not applicable.

14.6. Special precautions for the user

Not applicable.

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

Not applicable.

15. INFORMATION ABOUT THE CURRENT REGULATORY FRAMEWORK

15.1. Safety, health and environmental regulatory framework/legislation specific to the substance or mixture

Information according to EU regulatory framework

HRB and SHB for stabilization are mixtures that are defined in REACH and are not subject to registration. Cement clinker is exempt from registration according to Art 2.7 (b) and Annex V.10 of REACH.

The marketing and use of HRB and SHB for stabilization are subject to restrictions imposed on the content of soluble chromium Cr (VI) (REACH, Annex XVII, item 47, Chromium VI compounds).

Restrictions on use:

In accordance with Annex XVII, paragraph 47 of Regulation (EC) 1907/2006 (REACH), the trading and use of cements and cement containing preparations shall be subject to the following restrictions:

1. Cement and cement containing mixtures shall not be marketed or used if they contain more than 2 mg/kg (0.0002 %) of soluble chromium (VI) of the cement's total dry weight after hydration.
2. If reducing agents have been used, then without prejudice to the implementation of other EU provisions on the classification, packaging and labeling of substances and mixtures, the suppliers shall guarantee, before placing the product on the market, that the cement's or cement containing mixtures' packaging will be visible, legible and indelibly marked with information about the date of packaging, the storage conditions and the storage period that shall be appropriate to maintain the activity of the reducing agent and shall keep the content of soluble chromium (VI) below the limit referred to in paragraph 1.
3. By way of derogation, paragraphs 1 and 2 shall not apply to the marketing and use in controlled closed and fully automated processes of cement or cement containing mixtures that have been processed only by machines and where there is no possibility of skin contact.
4. The standard adopted by the European Committee for Standardization (CEN) on the testing of water-soluble chromium (VI) content in cement and cement containing mixtures shall be used as a test method aimed at demonstrating compliance with paragraph 1.

Within the scope of the Agreement for the protection of workers' health through good handling and use of crystalline silica and its products, the manufacturers of cement have committed to apply "Best Practices" in safe handling (<https://guide.nepsi.eu/>).

Regulation № 1907/2006, issued by the European Parliament and Council on the 18th of December 2006 with regards to the registration, evaluation, authorization and restriction of chemicals, the creation of European Chemicals Agency, the amendment of Directive № 1999/45/EC, the repeal of Council's Regulation № 793/93 and Commission's Regulation № 1488/94, including Council's Directive № 76/769/EEC and Commission's Directives № 91/155/EEC, 93/67/EEC and 2000/21/EC – REACH.

Regulation № 1272/2008, issued by the European Parliament and Council on the 16th of December 2008 with regards to the classification, labeling and packaging of substances and mixtures, the amendment and repeal of Directives № 67/548/EEC and 1999/45/EC, and the amendment of Regulation (EC) № 1907/2006.

Commission's Regulation (EU) № 830/2015 dated 28th of May, 2015, related to the amendment of European Parliament and Council Regulation (EC) № 1907/2006 on the registration, evaluation, authorization and restriction of chemicals (REACH).

National legislation:

Environmental Protection Act;
Waste Management Act;
Ordinance № 2 on waste classification;
Law on Health and Safety at Work;
Ordinance № 13/2003 on workers' protection from risks associated with exposure to chemical agents in the workplace;
Ordinance № 10/26.09.2003 on workers' protection from risks associated with exposure to carcinogens and mutagens in the workplace.

15.2. Safety assessment of chemical substances or mixtures

No chemical safety assessment has been conducted for this mixture.

16. OTHER INFORMATION

16.1. Indication of changes

Changes related to Regulation (EC) № 1272/2008;
Changes related to Regulation (EC) № 453/2010;
Addition of new Section 16.2 "Indicated uses and description of uses and categories"
Changes related to additional clauses included in Sections 2 and 16;
Changes related to the removal of items in Section 2;
Changes related to Regulation (EU) № 830/2015;
Changes related to Regulation (EU) № 2020/878 dated June 18th, 2020.

16.2. Indicated uses and description of uses and categories

The table below contains an overview of all identified applications of cement or cement containing hydraulic binders. All applications are included in identified groups due to the specific exposure conditions for human health and the environment. For each specific use there is a set of risk management measures or localized controls (see Section 8) which must be introduced by the user of cement or cement containing hydraulic binders with the purpose of reducing the exposure to an acceptable level.

Process category	Use - description	Production/making of construction materials	Professional/industrial use of construction materials
2	Use in a closed continuous process with random controlled exposure (e.g. in the industrial or professional manufacturing of hydraulic binders)	X	X
3	Use in a closed periodic process (e.g. in the industrial or professional manufacturing of concrete mixtures)	X	X
5	Mixing or homogenizing in a periodic process for the formulation of preparations* and products (e.g. in the	X	X

	industrial or professional manufacturing of finished concrete elements)		
7	Industrial machine laying (e.g. industrial laying of hydraulic binder wet suspension by means of injection molding)		X
8a	Transfer of substance or mixture (filling/emptying) from/to vessels/large containers in non-specialized facilities (e.g. using cement from bags to prepare a solution)		X
8b	Transfer of substance or mixture (filling/emptying) from/to vessels/large containers in specialized facilities (e.g. filling silos, cement trucks or ships in cement plants)	X	X
9	Transfer of substance or mixture in small vessels/containers (e.g. filling cement into bags in cement plants)	X	X
10	Manual application (e.g. products improving the adhesion between the construction surface and the finishing materials)		X
11	Non-industrial machine laying (e.g. professional laying of wet hydraulic binder suspension by means of injection molding)		X
13	Treating the items by dipping and pouring (e.g. covering the construction product with a layer that improves its operational qualities)		X
14	Production of mixtures or items by tableting, compression, extrusion and pelletizing (e.g. manufacturing of floor tiles)	X	X
19	Manual mixing only with direct contact and available PPE (e.g. mixing a hydraulic binder solution on the construction site)		X
22	Mineral/metal processing operations in potentially closed systems at higher temperature in an industrial environment (e.g. brick production)		X
26	Handling of solid inorganic substances at normal ambient temperature (e.g. hydraulic binder wet mixtures)	X	X

16.3. Abbreviations and acronyms

ACGIH	American Conference of Governmental Industrial Hygienists
ADR/RID	European Agreement concerning the International Carriage of Dangerous Goods by Road
APF	Assigned Protection Factor
CAS	Chemical Abstracts Service
CLP	Classification, Labelling and Packaging (Regulation (EU) № 1272/2008)
COPD	Chronic Obstructive Pulmonary Disease
DNEL	Derived No-Effect Level
EC50	Maximum effective concentration
ECHA	European Chemicals Agency
EINECS	European Inventory of Existing Chemical Substances
HEPA	High Efficiency Particulate Air filter
ES	Impact scenario/level of exposure
EWC	European Waste Catalogue
FFP	Filtering Face Piece dust mask (disposable)
FMP	Dust mask with filter
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods Code
MEASE	Exposure assessment, http://www.ebrc.de/ebrc/ebrc-mease.php
MS	Member-State
PBT	Persistent Bio-accumulative and Toxic
PROC	Process Category
REACH	European Parliament and Council Regulation (EC) № 1907/2006 on the registration, evaluation, authorization and restriction of chemicals (REACH).
STOT	Specific Target Organ Toxicity
TLV-TWA	Threshold Limit Value - Time-Weighted Average
vPvB	very Persistent very Bio-accumulative
w/w	Weight to Weight

16.4. Main references and literature data sources

- (1) Portland Cement Dust - Hazard assessment document EH75/7, UK Health and Safety Executive, 2006. Available from: <http://www.hse.gov.uk/pubns/web/portlandcement.pdf>.
- (2) Observations on the effects of skin irritation caused by cement, Kietzman et al, *Dermatosen*, 47, 5, 184- 189 (1999).
- (3) European Commission's Scientific Committee on Toxicology, Ecotoxicology and the Environment (SCTEE) opinion of the risks to health from Cr (VI) in cement (European Commission, 2002). http://ec.europa.eu/health/archive/ph_risk/committees/sct/documents/out158_en.pdf.
- (4) Epidemiological assessment of the occurrence of allergic dermatitis in workers in the construction industry related to the content of Cr (VI) in cement, NIOH, Page 11, 2003.

- (5) U.S. EPA, Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, 3rd ed. EPA/600/7-91/002, Environmental Monitoring and Support Laboratory, U.S. EPA, Cincinnati, OH (1994a) and 4th ed. EPA-821-R-02-013, US EPA, office of water, Washington D.C. (2002).
- (6) U.S. EPA, Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, 4th ed. EPA/600/4-90/027F, Environmental Monitoring and Support Laboratory, U.S. EPA, Cincinnati, OH (1993) and 5th ed. EPA-821-R-02-012, US EPA, office of water, Washington D.C. (2002).
- (7) Environmental Impact of Construction and Repair Materials on Surface and Ground Waters. Summary of Methodology, Laboratory Results, and Model Development. NCHRP report 448, National Academy Press, Washington, D.C., 2001.
- (8) Final report Sediment Phase Toxicity Test Results with *Corophium volutator* for Portland clinker prepared for Norcem A.S. by AnalyCen Ecotox AS, 2007.
- (9) TNO report V8801/02, An acute (4-hour) inhalation toxicity study with Portland Cement Clinker CLP/GHS 03-2010-fine in rats, August 2010.
- (10) TNO report V8815/09, Evaluation of eye irritation potential of cement clinker G in vitro using the isolated chicken eye test, April 2010.
- (11) TNO report V8815/10, Evaluation of eye irritation potential of cement clinker W in vitro using the isolated chicken eye test, April 2010.
- (12) Investigation of the cytotoxic and proinflammatory effects of cement dusts in rat alveolar macrophages, Van Berlo et al, Chem. Res. Toxicol., 2009 Sept; 22(9):1548-58.
- (13) Cytotoxicity and genotoxicity of cement dusts in A549 human epithelial lung cells in vitro; Gminski et al, Abstract DGPT conference Mainz, 2008.
- (14) Comments on a recommendation from the American Conference of governmental industrial Hygienists to change the threshold limit value for Portland cement, Patrick A. Hessel and John F. Gamble, EpiLung Consulting, June 2008.
- (15) Exposure to Thoracic Aerosol in a Prospective Lung Function Study of Cement Production Workers; Noto, H., et al; Ann. Occup. Hyg., 2015, Vol. 59, No. 1, 4–24.
- (16) MEASE, Metals estimation and assessment of substance exposure, EBRC Consulting GmbH for Eurometaux, <http://www.ebrc.de/ebrc/ebrc-mease.php>
- (17) Occurrence of allergic contact dermatitis caused by chromium in cement. A review of epidemiological investigations, Kåre Lenvik, Helge Kjuus, NIOH, Oslo, December 2011.
- (18) Regulation (EU) № 453/2010, issued by the European Commission on the 20th of May 2010 for the amendment of European Parliament and Council Regulation (EC) № 1907/2006 on the registration, evaluation, authorization and restriction of chemicals (REACH).

- (19) Regulation (EU) № 830/2015, issued by the European Commission on the 28th of May 2015 for the amendment of European Parliament and Council Regulation (EC) № 1907/2006 on the registration, evaluation, authorization and restriction of chemicals (REACH).
- (20) ECHA Support Questions and answers agreed with National Helpdesks. ID1695 May 2020. <https://echa.europa.eu/es/support/qas-support/qas-agreed-with-national-helpdesks>

16.5. Respective risk phrases and/or hazard warnings (number and full text)

H315	Causes skin irritation
H318	Causes serious eye damage
H317	May cause an allergic skin reaction
H302	Harmful if swallowed
H335	May cause irritation of the respiratory tract

16.6. Training tips

In addition to the workers' training on health, safety and environment, the companies must make sure that their employees have read and understood the Safety Data Sheet and are complying with its requirements.

16.7. Additional information

The testing data and method used in the classification of HRB and SHB for stabilization s are included in Section 11.1.

16.8. Classification and procedure used in the classification of mixtures according to Regulation (EC) № 1272/2008 [CLP]

Classification according to Regulation (EC) № 1272/2008 [CLP]	Classification procedure
Skin irritation 2, H315	Based on experimental data
Serious eye damage/irritation 1, H318	Based on experimental data
Harmful if swallowed H302	
Skin sensitization 1B, Skin sensitization H317	Human experiment
Organ-specific toxicity in the event of single exposure respiratory tract irritation 3, H335	Human experiment

16.9. Protection clause

The information in this technical data sheet reflects the currently available knowledge and serves as a reliable source as long as the product is utilized in observance of the prescribed conditions and in compliance with its intended use as indicated on the packaging and/or specified in the technical manuals. The user shall be responsible for any other application of the product, including its combination with other products or processes.

It becomes clear that the user shall be held liable for the adoption of appropriate safety measures and the implementation of regulations concerning his/her activities.

Attachment: Additional tables with technical means of control and individual protection measures for Section 8.2

1. DNEL inhalation per 1 mg/m³

8.2.1. Appropriate technical control

Use	PROC*	Exposure	Localized control	Effectiveness
Industrial manufacturing / production of hydraulic binding construction materials	2, 3	The duration is not limited (up to 480 minutes per shift, 5 days a week) < 240 min.	Not required	-
	14, 26		A) not required or B) general local exhaust ventilation	- 78 %
			5, 8b, 9	general local exhaust ventilation
Industrial use of dry hydraulic binding construction materials (outdoor and indoor)	2		not required	-
	14, 22, 26		A) not required or B) general local exhaust ventilation	- 78 %
			5, 8b, 9	general local exhaust ventilation
Industrial use of wet suspension of hydraulic binding construction materials	7		A) not required or B) general local exhaust ventilation	- 78 %
	2, 5, 8b, 9, 10, 13, 14		Not required	-
Professional use of dry hydraulic binding construction materials (outdoor and indoor)	2		A) not required or B) general local exhaust ventilation	- 72 %
	9, 26		A) not required or B) general local exhaust ventilation	- 72 %
	5, 8a, 8b, 14		general local exhaust ventilation	72 %
	19		Localized control is not applicable, for the process is carried out only in a well-ventilated premise or outdoors	-
Professional use of wet suspension of hydraulic binding construction materials	11	A) not required or B) general local exhaust ventilation	- 72 %	
	2, 5, 8a, 8b, 9, 10, 13, 14, 19	Not required	-	

*PROC are the identified applications described in Section 16.2.

8.2.2. Individual protection measures - personal protective clothing/equipment

Use	PROC*	Exposure	Specification of Personal Protective Equipment (PPE) - protection class	PPE for respiratory protection as per class (APF)
Industrial manufacturing / production of hydraulic binding construction materials	2, 3	The duration is not limited (up to 480 minutes per shift, 5 days a week)	Not required	-
	14, 26		A) FFP2 or B) FFP1	APF = 10 APF = 4
	5, 8b, 9		A) FFP2	APF = 10
Industrial use of dry hydraulic binding construction materials (outdoor and indoor)	2		Not required	-
	14, 22, 26		A) FFP2 or B) FFP1	APF = 10 APF = 4
	5, 8b, 9		A) FFP2	APF = 10
Industrial use of wet suspension of hydraulic binding construction materials	7		A) FFP3 or B) FFP2	APF = 20 APF = 10
	2, 5, 8b, 9, 10, 13, 14		Not required	-
Professional use of dry hydraulic binding construction materials (outdoor and indoor)	2		A) FFP2 or B) FFP1	APF = 10 APF = 4
	9, 26		A) FFP3 or B) FFP2	APF = 20 APF = 10
	5, 8a, 8b, 14		A) FFP3	APF = 20
	19		A) FFP3	APF = 20
Professional use of wet suspension of hydraulic binding construction materials	11	A) FFP3 or B) FFP2	APF = 20 APF = 10	
	2, 5, 8a, 8b, 9, 10, 13, 14, 19	Not required	-	

*PROC are the identified applications described in Section 16.2.

2. DNEL inhalation per 5 mg/m³

8.2.1. Appropriate technical control

Use	PROC*	Exposure	Localized control	Effectiveness
Industrial manufacturing / production of hydraulic binding construction materials	2, 3	The duration is not limited (up to 480 minutes per shift, 5 days a week)	Not required	-
	14, 26		A) not required	-
			B) general local exhaust ventilation	78 %
5, 8b, 9	A) general ventilation		-	
	B) general local exhaust ventilation		82 %	
Industrial use of dry hydraulic binding construction materials (outdoor and indoor)	2		not required	-
	14, 22, 26		A) not required	-
			B) general local exhaust ventilation	78 %
5, 8b, 9	A) not required		-	
	B) general local exhaust ventilation		82 %	
Industrial use of wet suspension of hydraulic binding construction materials	7			-
	2, 5, 8b, 9, 10, 13, 14			78 %
Professional use of dry hydraulic binding construction materials (outdoor and indoor)	2		Not required	-
	9, 26	A) not required	-	
		B) general local exhaust ventilation	29 %	
	5, 8a, 8b, 14	A) not required	-	
19	or	B) general local ventilation	77 %	
		A) not required	-	
		B) integrated local ventilation	72 %	
		Localized control is not applicable, for the process is carried out only in a well-ventilated premise or outdoors	-	
Professional use of wet suspension of hydraulic binding construction materials	11		A) not required	-
	2, 5, 8a, 8b, 9, 10, 13, 14, 19		or	
			B) general local exhaust ventilation	77 %
			Not required	-

*PROC are the identified applications described in Section 16.2.

8.2.2. Individual protection measures - personal protective clothing/equipment

Use	PROC*	Exposure	Specification of Personal Protective Equipment (PPE) - protection class	PPE for respiratory protection as per class (APF)
Industrial manufacturing / production of hydraulic binding construction materials	2, 3	The duration is not limited (up to 480 minutes per shift, 5 days a week)	Not required	-
	14, 26		A) FFP1 or B) not required	APF = 4
	5, 8b, 9		A) FFP2 or B) not required	APF = 10
Industrial use of dry hydraulic binding construction materials (outdoor and indoor)	2		Not required	-
	14, 22, 26		A) FFP1 or B) not required	APF = 4
	5, 8b, 9		A) FFP2 or B) not required	APF = 10
Industrial use of wet suspension of hydraulic binding construction materials	7		A) FFP2 or B) not required	APF = 10
	2, 5, 8b, 9, 10, 13, 14		Not required	-
Professional use of dry hydraulic binding construction materials (outdoor and indoor)	2		A) FFP1 or B) not required	APF = 4
	9, 26		A) FFP2 or B) not required	APF = 10
	5, 8a, 8b, 14		A) FFP3 or B) FFP1	APF = 20 APF = 4
	19		A) FFP2	APF = 10
Professional use of wet suspension of hydraulic binding construction materials	11	A) FFP2 or B) F not required	APF = 10	
	2, 5, 8a, 8b, 9, 10, 13, 14, 19	Not required	-	

*PROC are the identified applications described in Section 16.2.

Register of changes as of 2022

***2.5/30.04.2024** – The names of Devnya Cement AD and Vulkan Cement AD have accordingly been changed to Heidelberg Materials Devnya AD and Heidelberg Materials Vulkan AD; updating data on the issuer of Safety Data Sheet; merging the products of Heidelberg Materials Devnya AD and Heidelberg Materials Vulkan AD into a single Safety Data Sheet; updating information about the products manufactured by both companies; updating information about composition and emergency cases; adding a register of changes.

*** 2.6/01.02.2025** - Updating information about companies' products, adding UFI codes