SECTION 1: IDENTIFICATION OF THE SUBSANCE OR MIXTURE AND COMPANY

1.1 Product identifier

Portland cement (UFI: 5S10-Y05U-900A-XNYN)

CEM I 42.5 N-SR3 MH/LA *Infracement*
CEM I 52.5 R *Rapidcement*

Portland-composite cement (UFI: VD20-H00M-E00T-K22M)

CEM II/A-M 52.5 N *Kompositcement*

Portland-slag cement (UFI: 4V10-F0V7-K00U-M0JS)

CEM II/B-S 52.5 N *Miljöcement*

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

Cements/binding agents are directly applied or used in industrial installations to manufacture/formulate hydraulic binders for building and construction work, such as ready-mixed concrete, mortars, renders, grouts, plasters as well as precast concrete. Common cements and cement containing mixtures (hydraulic binders) are used industrially, by professionals as well as by consumers in building and construction work, indoor and outdoor. The identified uses of cements and cement containing mixtures cover the dry products and the products in a wet suspension (paste).
A list of uses for professional users, indicating the process categories and descriptors according to ECHA Guidance R.12 (ECHA-2010-G-05) are listed in section 16.

1.3 Details of the supplier/creator of the safety data sheet

SCHWENK Sverige AB
c/o Regus, Hyllie Boulevard 34
215 35 Hyllie
Phone: 040-31 75 50
Contact: Urs Müller
Email: urs.mueller@schwenk.com
Website: www.schwenk.se

1.4 Emergency phone numbers:

Swedish emergency number: **112** (urgent cases)
Swedish Poison Information Centre: **010-456 67 00** (less urgent cases)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification

The mixture is classified as hazardous according to European Union Regulation 1272/2008 (CLP) and Annexes.

Eye Dam. 1; H318 - Causes serious eye damage.
Skin Irrit. 2; H315 - Causes skin irritation.
STOT SE 3; H335 - May cause respiratory system irritation

2.2 Label elements

According to Regulation 1272/2008 (CLP):

Hazard pictograms:

GHS05

GHS07

Signal word:
Danger

Hazard statements:
H318 - Causes serious eye damage.
H315 - Causes skin irritation.
H335 - May cause respiratory irritation.

Precautionary statements:
P102 - Keep out of reach of children
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338+P310 - IF IN EYES: Rinse cautiously with water for several minutes Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.
P302 + P352 + P333 + P313 - IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: get medical advice/attention.
P261 + P304 + P340 + P312 - Avoid breathing dust/fume/gas/mist/vapour/spray. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P501 - Dispose of contents/container according to local regulations.

Supplemental information
Skin contact with wet cement paste may cause irritation, dermatitis or burns.
May cause damage to products made of aluminium or other non-noble metals.

2.3 Other hazards

Cement does not meet the criteria for PBT or vPvB in accordance with Annex XIII of REACH (Regulation (EC) No 1907/2006).
The product contains chromate, whereby the content of water-soluble chromium (VI) is less than 0.0002% (determined according to EN 196-10). Inappropriate storage (access of moisture) or superposition the chromate reducing agent may lose its effectiveness and it cannot be excluded a sensitizing effect of the cement in contact with skin. (H 317 or EUH203).
Remains low chromate for bulk goods at least 2 months after the date of delivery and as bagged goods for at least 6 months from the production date if stored properly in dry conditions.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance

Not applicable, since the product is a mixture.

3.2 Mixtures

Portland cement-based binders according to SS-EN 197-1, SS 134202 and SS 134203 are a finely ground powders; the reaction with water creates hydrate phases which give concrete and mortar their strength and durability.

Hazardous components

Name	Portland cement clinker[1]		Flue dust[2]	
EC Number	266-043-4		270-659-9	
CAS Number	65997-15-1		68475-76-3	
Identificator/ REACH registration No.	Not applicable for registration.		01-2119486767-17-xxxx	
Concentration (%)	5-100		0.1-5	
Classification according to Regulation 1272/2008/EC	Danger, Cat. 1		Danger, Cat. 1	
	Skin Irrit. 2 Skin Sens. 1B Eye Dam. 1 STOT SE 3	H315 H317 H318 H335	Skin Irrit. 2 Skin Sens. 1B Eye Dam. 1 STOT SE 3	H315 H317 H318 H335
				

[1] Portland cement clinker is exempt according to REACH Regulation Paragraph 2.7 (b) and Annex V Paragraph 7.
[2] Flue dust is a matter created during cement clinker production; other names are by-pass dust or by-pass filter dust.

Abbreviations and explanations for R and H phrases are stated in Section 16.
Occupational exposure limits (if applicable) are stated in Section 8.

Information on other product ingredients: Contains other naturally sourced minerals and blast furnace slag (Komposit- and Miljöcement) which are not classified as hazardous.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General instructions: Personal protection for first aid providers is not required. First aid providers shall avoid contact with dry or wet cement.

If in eyes: Do not rub the eyes when dry since the mechanical stress could cause further damage to the cornea. Remove contact lenses, if present. Bow the head to the side of affected eye, open eyelids as wide as possible and immediately rinse eye (-s) with plenty of water at least for 20 minutes until all particles are washed out. Take care to avoid wash in particles into the unaffected eye. If available, use isotonic saline solution (0,9% NaCl). Contact a professional medical assistant or eye doctor.

If on skin: When dry cement is in contact with the skin, clean and rinse affected parts with plenty of water.

When the wet cement paste is in contact with the skin, rinse affected parts with plenty of water.

Take off contaminated clothes, footwear and other contaminated accessories (i.e. watch etc.) and throughout wash/clean them before continue to use.

In case of signs of irritation or burns always seek for medical assistance.

If inhaled: Move the victim into fresh air. Inhaled dry cement will discharge from throat or rhinopharynx spontaneously by coughing or sneezing. Contact doctor if irritation or other discomfort, cough or other symptoms will develop at a later stage.

If swallowed: Do not induce vomiting! If victim is conscious, flush the mouth with water and give plenty of water to drink. Immediately seek for medical assistance and consult the poison centre.

4.2 Most important symptoms and effects, both acute and delayed

If in eyes: In contact with eyes dry cement or wet paste may cause serious and, in some cases, permanent damage to the eyes.

If on skin: Dry cement or paste may cause irritation or dermatitis if continuously or in repeated contact with wet or perspiring skin. Continuous contact with paste may cause irritation, dermatitis or burns (i.e. by kneeling on wet concrete or mortars if it penetrates the fabric of the work wear).

If inhaled: Repeated inhalation of dry cement in long periods may increase risk of pulmonary diseases.

If swallowed: Swallowing of cement particles are unlikely due to its powdered state, although in case of accident mouth, throat and oesophagus irritation may occur.

4.3 Indication of any immediate medical attention and special treatment needed

Treat according to symptoms, see above. If symptoms appear after above measures, immediately get medical advice or treatment. With contact with physician, take this MSDS with you.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Cement is not flammable.

5.2 Special hazards arising from the substance or mixture

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

5.3 Advice for firefighters

Cement poses no fire-related hazards. Protective measures are taken with regard to other material on the site.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: Avoid inhalation of dust and contact with skin, eyes and clothes during clean-up. Wear individual protective wear as per Section 8 and consider instructions as per Section 7 regarding safe handling of cement.

For first responders: Special measures or procedures are not required. Respiratory protective devices to be used in case of high concentration of dust in the air.

6.2 Environmental precautions

Prevent leakage or spillage to drains or water courses. Avoid release to the environment.

6.3 Methods and material for containment and cleaning up

Dry cement: Use clean-up methods such as vacuum clean-up or vacuum extraction (Industrial portable units, equipped with high efficiency particulate air filters (EPA and HEPA filters, EN 1822-1) or equivalent technique) which do not cause airborne dispersion. Never use compressed air. Alternatively, wipe-up the dust by mopping, wet brushing or by using water sprays or hoses (fine mist to avoid that the dust becomes airborne) and remove slurry. If not possible, remove by slurrying with water (see wet cement).

When wet cleaning or vacuum cleaning is not possible and only dry cleaning with brushes can be done, ensure that the workers wear the appropriate personal protective equipment and prevent dust from spreading. Avoid inhalation of cement and contact with skin. Place spilled materials into a container. Solidify before disposal as described under section 13.

Wet cement: Clean up wet cement and place in a container. Allow material to dry and solidify before disposal as described under section 13.

6.4 Reference to other sections

See Section 1 for phone contacts in case of emergency.
See Section 8 for suitable personal protective equipment.
For additional information on waste utilization see Section 13.

SECTION 7: SECTION: HANDLING AND STORAGE

7.1 Precautions for safe handling

7.1.1 Protective measures

Follow the recommendations as given under section 8. To clean up dry cement, see subsection 6.3.

Measures to prevent fire
Not applicable.

Measures to prevent aerosol and dust generation
Do not sweep. Use dry cleanup methods such as vacuum clean-up or vacuum extraction, which do not cause airborne dispersion.

Measure to protect the environment
No particular measures.

7.1.2 Advice on general occupational hygiene

Do not handle or store near food and beverages or smoking materials. In dusty environment, wear dust mask and protective goggles (see Section 8). Use protective gloves to avoid skin contact. The workplace should have emergency showers and eye wash stations.

7.2 Conditions for safe storage, including any incompatibilities

The cements need to be stored under clean and dry conditions (moisture condensation within storage tanks or silos needs to be minimized), waterproof place, protected from moisture and contamination. Do not use aluminium containers for mixing of dry cement with water (fresh concrete or mortar production), as the metal is not compatible. Storage areas for bulk cement should not be accessed without proper safety measures since there are possibilities for a cave-in of unstable heaps of cement within the storage areas (silos, tankers, bunkers, etc.) entailing the risk to be buried alive and of asphyxiation.

7.3 Specific end use (-s)

Binder for concrete, mortar, grout and plaster/render (see 1.2).

7.4 Control of soluble chromium (VI)

For Cements treated with a Cr (VI) reducing agent according to the regulations given in section 15, the effectiveness of the reducing agent diminishes with time. Therefore, cement bags and/or delivery documents will contain information on the packaging date, the storage conditions and the storage period appropriate to maintaining the activity of the reducing agent and to keeping the content of soluble chromium (VI) below 0.0002 % of the total dry weight of the cement ready for use, according to EN 196-10. They will also indicate the appropriate storage conditions for maintaining the effectiveness of the reducing agent.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Inorganic dust, level limit value (AFS 2018:1) Inhalable fraction: 5 mg/m^3
Respirable fraction: 2.5 mg/m^3

DENL (Derived No-Effect Level) Not determined

PNEC (Predicted No-Effect Concentration) Not applicable (hardening in contact with water)

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Measures to reduce generation of dust and to avoid dust propagating in the environment such as dedusting, exhaust ventilation and dry clean-up methods which do not cause airborne dispersion. Technical control measures (table in 8.2.1) and individual protection measures (table in 8.2.2) are recommended for all identified uses (section 1.2).
For each individual PROC*, companies can choose from either option A) or B) in the two tables, according to what is best suited to their specific situation. If one option is chosen, then the same option (A and A or B and B) has to be chosen from the other table.

Exposure Scenario	PROC*	Exposure	Localised controls	Efficiency
Industrial manufacture/formulation of hydraulic building and construction materials	2, 3	Duration is not restricted (up to 480 minutes per shift, 5 shifts a week)	not required	-
	14, 26		A) not required or B) generic local exhaust ventilation	- 78 %
	5, 8b, 9		A) general ventilation or B) generic local exhaust ventilation	17 % 78 %
Industrial uses of dry hydraulic building and construction materials (indoor, outdoor)	2		not required	-
	14, 22, 26		A) not required or B) generic local exhaust ventilation	- 78 %
	5, 8b, 9		A) general ventilation or B) generic local exhaust ventilation	17 % 78 %
Industrial uses of wet suspension of hydraulic building and construction materials	7		A) not required or B) integrated local exhaust ventilation	- 78 %
	2, 5, 8b, 9, 10, 13, 14		not required -	-
Professional use of dry hydraulic building and construction material (indoor, outdoor)	2		not required	-
	9, 26		A) not required or B) generic local exhaust ventilation	- 72 %
	5, 8a, 8b, 14		A) not required or B) generic local exhaust ventilation	- 77 %

Exposure Scenario	PROC*	Exposure	Localised controls	Efficiency
	19		localised controls are not applicable, process only in well ventilated rooms or outdoors	50 %
Professional uses of wet suspensions of hydraulic building and construction materials	11		A) not required or B) integrated local exhaust ventilation	- 72 %
	2, 5, 8a, 8b, 9, 10, 13, 14, 19		not required	-

* PROC's are identified uses and defined in section 16

8.2.2 Individual protection measures such as personal protection equipment

General: During work avoid kneeling in fresh mortar or concrete wherever possible. If kneeling is absolutely necessary, appropriate waterproof personal protective equipment must be worn.

- Do not eat, drink or smoke when working with cement to avoid contact with skin or mouth.
- Before starting to work with cement, apply a barrier creme and reapply it at regular intervals.
- Immediately after working with cement or cement-containing materials, workers should wash or shower or use skin moisturisers.
- Remove contaminated clothing, footwear, watches, etc. and clean thoroughly before re-using them.

Eye/face protection

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

Skin protection

Use impervious, abrasion and made of low soluble Cr (VI) containing material. Use watertight wear, and alkali resistant protective gloves (e.g. nitrile soaked cotton gloves with CE marking) internally lined with cotton, boots, closed long-sleeved protective clothing as well as skin care products (e.g. barrier creams) to protect the skin from prolonged contact with wet cement. Particular care should be taken to ensure that wet cement does not enter the boots. Regarding gloves, investigations have proven that nitrile impregnated cotton gloves (layer thickness of c. 0.15 mm) provide sufficient protection over a period of 480 minutes, subject to normal wear and tear which can be task dependent. Always change damaged or soaked gloves immediately. Always have spare gloves in ready supply. In certain situations, e.g. when casting concrete or paving, waterproof trousers and kneepads must be used.

Respiratory protection

When a person is potentially exposed to dust levels above exposure limits, use appropriate respiratory protection. The type of respiratory protection should be adapted to the dust level and conform to the relevant EN standard, (e.g. EN 149, EN 140, EN 14387, EN 1827) or national standard.

Thermal hazards

Not applicable

Exposure Scenario	PROC*	Exposure	Specification of respiratory protective equipment (RPE)	RPE efficiency - assigned protection factor (APF
Industrial manufacture/formulation of hydraulic building and construction materials	2, 3	Duration is not restricted (up to 480 minutes per shift, 5 shifts a week)	not required	-
	14, 16		A) P1 mask (FF, FM) or B) not required	APF = 4 -
	5, 8b, 9		A) P2 mask (FF, FM) or B) P1 mask (FF, FM)	APF = 10 APF = 4
Industrial uses of dry hydraulic building and construction materials (indoor, outdoor)	2		not required	-
	14, 22, 26		A) P1 mask (FF, FM) or B) not required	APF = 4 -
	5, 8b, 9		A) P2 mask (FF, FM) or B) P1 mask (FF, FM)	APF = 10 APF = 4
Industrial uses of wet suspension of hydraulic building and construction materials	2, 5, 8b, 9, 10, 13, 14		not required	-
	7		A) P1 mask (FF, FM) or B) not required -	APF = 4 -
	2		P1 mask (FF, FM)	APF = 4

Exposure Scenario	PROC*	Exposure	Specification of respiratory protective equipment (RPE)	RPE efficiency - assigned protection factor (APF
Professional use of dry hydraulic building and construction material (indoor, outdoor)	9, 26		A) P2 mask (FF, FM) or B) P1 mask (FF, FM)	APF = 10 APF = 4
	5, 8a, 8b, 14		A) P3 mask (FF, FM) or B) P1 mask (FF, FM)	APF = 20 APF = 4
	19		P2 mask (FF, FM)	APF = 10
Professional uses of wet suspensions of hydraulic building and construction materials	11		A) P2 mask (FF, FM) or B) P1 mask (FF, FM)	APF = 10 APF = 4
	2, 5, 8a, 8b, 9, 10, 13, 14, 19		not required	-

* PROC's are identified uses and defined in section 16

An overview of the APFs of different RPE (according to EN 529:2005) can be found in the glossary of MEASE (3). Any RPE as defined above shall only be worn if the following principles are implemented in parallel: The duration of work (compare with "duration of exposure" above) should reflect the additional physiological stress for the worker due to the breathing resistance and mass of the RPE itself, due to the increased thermal stress by enclosing the head. In addition, it shall be considered that the worker's capability of using tools and of communicating are reduced during the wearing of RPE.
For reasons as given above, the worker should therefore be (i) healthy (especially in view of medical problems that may affect the use of RPE), (ii) have suitable facial characteristics reducing leakages between face and mask (in view of scars and facial hair). The recommended devices above which rely on a tight face seal will not provide the required protection unless they fit the contours of the face properly and securely.
The employer and self-employed persons have legal responsibilities for the maintenance and issue of respiratory protective devices and the management of their correct use in the workplace. Therefore, they should define and document a suitable policy for a respiratory protective device programme including training of the workers.

8.2.3 Environmental exposure controls

Air
Needs to comply with dust emission limit values according to technical rules for air.

Water
Cement spills in the sewage system or waterways can cause an increase of pH. At a pH above 9, negative ecotoxicological effects are possible.

Soil and ground
No special interventions/measures are necessary.

SECTION 9: SECTION: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Dry cement is a finely ground solid inorganic material (grey or white powder). Main particle size: 5 - 30 µm
Odour	Odourless
Odour threshold	No odour threshold, odourless
pH	T = 20 °C in water, water-solid ratio 1:2: 11 - 13.5
Melting point	> 1 250 °C
Initial boiling point and boiling range	Not applicable, under normal atmospheric conditions, melting point >1 250°C
Flash point	Not applicable, is not a liquid
Evaporation rate	Not applicable, is not a liquid
Flammability	Not applicable, is a non-combustible solid and does not cause or contribute to fire through friction
Upper/lower flammability or explosion limits	Not applicable, is not a flammable gas
Vapour pressure	Not applicable, melting point > 1 250 °C
Vapour density	Not applicable, melting point > 1 250 °C
Relative density	2.75 – 3.20 g/cm^3

Apparent density	0.9 – 1.5 g/cm^3
Solubility in water (T = 20 °C)	Minor (0.1 - 1.5 g/l)
Partition coefficient: n-octanol/water	Not applicable, is inorganic mixture
Auto-ignition temperature	Not applicable (no pyrophoricity – no organo-metallic, organo-metalloid or organophosphine bindings or of their derivatives, and no other pyrophoric constituent in the composition)
Decomposition temperature	Not applicable, no organic peroxide present
Viscosity	Not applicable, not a liquid
Explosive properties	Not applicable. Not explosive or pyrotechnic. Not in itself capable by chemical reaction of producing gas at such temperature and pressure and at such a speed as to cause damage to the surroundings. Not capable of a self-sustaining exothermic chemical reaction
Oxidising properties	Not applicable as does not cause or contribute to the combustion of other materials

9.2 Other information

Information on physical hazard classes: Not applicable

Other safety characteristics: Not applicable

SECTION 10: SECTION: STABILITY AND REACTIVITY

10.1 Reactivity

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

10.2 Chemical stability

Dry cement is stable as long as it is properly stored (see section 7) and compatible with most other building materials. Cement should be kept dry.
Contact with incompatible materials should be avoided. Wet cement is alkaline and incompatible with acids, with ammonium salts, with aluminium or other non-noble, amphoteric metals.
Cement dissolves in hydrofluoric acid to produce corrosive silicon tetrafluoride gas. Cement reacts with water to form silicates and calcium hydroxide. Silicates in cement react with strong oxidizers such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride.

10.3 Possibility of hazardous reactions

Cements do not cause hazardous reactions.

10.4 Conditions to avoid

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

10.5 Incompatible materials

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

10.6 Hazardous decomposition products

Cements will not decompose into any hazardous products.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Hazard class	Cat.	Effect	Reference
Acute toxicity – dermal	-	Limit test, rabbit, 24 hours contact, 2,000 mg/kg body weight – no lethality. Based on available data, the classification criteria are not met.	(4)
Acute toxicity – inhalation	-	No acute toxicity by inhalation observed. Based on available data, the classification criteria are not met.	(10)
Acute toxicity – oral	-	No indication of oral toxicity from studies with cement kiln dust. Based on available data, the classification criteria are not met.	Literature survey

Hazard class	Cat.	Effect	Reference
Skin corrosion/irritation	2	Cement in contact with wet skin may cause thickening, cracking or fissuring of the skin. Prolonged contact in combination with abrasion may cause severe burns.	(4) Human experience
Serious eye damage/ irritation	1	Portland cement clinker caused a mixed picture of corneal effects and the calculated irritation index was 128. Common cements contain varying quantities of Portland cement clinker, fly ash, blast furnace slag, gypsum, natural pozzolans, burnt shale, silica fume and limestone. Direct contact with cement may cause corneal damage by mechanical stress, immediate or delayed irritation or inflammation. Direct contact by larger amounts of dry cement or splashes of wet cement may cause effects ranging from moderate eye irritation (e.g. conjunctivitis or blepharitis) to chemical burns and blindness.	(11), (12)
Skin sensitisation	1B	Some individuals may develop eczema upon exposure to wet cement dust, caused either by the high pH which induces irritant contact dermatitis after prolonged contact, or by an immunological reaction to soluble Cr (VI) which elicits allergic contact dermatitis. The response may appear in a variety of forms ranging from a mild rash to severe dermatitis and is a combination of the two above mentioned mechanisms. If the cement contains a soluble Cr (VI) reducing agent and as long as the mentioned period of effectiveness of the chromate reduction is not exceeded, a sensitising effect is not expected (5).	(5), (13), (17), (18)
Respiratory sensitisation	-	There is no indication of sensitisation of the respiratory system. Based on available data, the classification criteria are not met.	(1)
Germ cell mutagenicity	-	No indication. Based on available data, the classification criteria are not met.	(14), (15)
Carcinogenicity	-	No causal association has been established between Portland cement exposure and cancer. The epidemiological literature does not support the designation of Portland cement as a suspected human carcinogen. Portland cement is not classifiable as a human carcinogen (According to ACGIH A4: Agents that cause concern that they could be carcinogenic for humans, but which cannot be assessed conclusively because of a lack of data. In vitro or animal studies do not provide indications of carcinogenicity that are sufficient to classify the agent with one of the other notations.). Based on available data, the classification criteria are not met.	(1) (16)
Reproductive toxicity	-	Based on available data, the classification criteria are not met.	No evidence from human experience
STOT-single exposure	3	Cement dust may irritate the throat and respiratory tract. Coughing, sneezing, and shortness of breath may occur following exposures in excess of occupational exposure limits. Overall, the pattern of evidence clearly indicates that occupational exposure to cement dust has produced deficits in respiratory function. However, evidence available at the present time is insufficient to establish with any confidence the dose-response relationship for these effects.	(1)
STOT-repeated exposure	-	Long-term exposure to respirable cement dust above the occupational exposure limit may lead to coughing, shortness of breath and chronic obstructive changes in the respiratory tract. No chronic effects were observed at low concentrations.	(17)
Aspiration hazard	-	Not applicable as cements are not used as an aerosol.	

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

Medical conditions aggravated by exposure

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

11.2 Information on other hazards

Not applicable.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

The product is not hazardous to the environment. Ecotoxicological tests with Portland cement on Daphnia magna (U.S. EPA, 1994a) (6) and Selenastrum coli (U.S. EPA, 1993) (7) have shown little toxicological impact. Therefore LC 50 and EC 50 values could not be determined (8). There is no indication of sediment phase toxicity (9). The addition of large amounts of cement to water may, however, cause a rise in pH and may, therefore, be toxic to aquatic life under certain circumstances.

12.2 Persistence and degradability

Not applicable as cement is an inorganic material. After hardening, cement presents no toxicity risks.

12.3 Bioaccumulative potential

Not applicable as cement is an inorganic material. After hardening, cement presents no toxicity risks.

12.4 Mobility in soil

Not applicable as cement is an inorganic material. After hardening, cement presents no toxicity risks.

12.5 Results of PBT and vPvB assessment

Not applicable as cement is an inorganic material. After hardening, cement presents no toxicity risks.

12.6 Endocrine disrupting properties

Not applicable.

12.7 Other adverse effects

Not applicable.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Do not dispose of into sewage systems or surface waters.

Product - cement that has exceeded its shelf life
(and when demonstrated that it contains more than 0.0002 % soluble Cr (VI)): shall not be used/sold other than for use in controlled closed and totally automated processes or should be recycled or disposed of according to local legislation or treated again with a reducing agent.

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

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

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

Waste code EWC
10 13 14 – Waste from manufacturing of cement – waste concrete or concrete sludge or
17 01 01 – construction and demolition wastes - concrete or
20 01 15 – alkaline waste (non-hydrated mixture)

Packaging
Completely empty the packaging and process it according to local legislation. EWC entry: 15 01 01 (waste paper and cardboard packaging).

SECTION 14: TRANSPORT INFORMATION

Cement is not covered by the international regulation on the transport of dangerous goods (IMDG, IATA, ADR/RID), therefore no classification is required.
No special precautions are needed apart from those mentioned under section 8.

14.1 UN number

Not applicable.

14.2 UN proper shipping name

Not applicable.

14.3 Transport hazard class(es)

Not applicable.

14.4 Packing group

Not applicable.

14.5 Environmental hazards

Not applicable.

14.6 Special precautions for user

Not applicable.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable.

SECTION 15: REGULATORY INFORMATION

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

Cement is a mixture according to REACH and is not subject to registration. Cement clinker is exempt from registration (Art 2.7 (b) and Annex V.10 of REACH).
The marketing and use of cement is subject to a restriction on the content of soluble Cr (VI) (REACH Annex XVII point 47 Chromium (VI) compounds):

1. Cement and cement-containing mixtures shall not be placed on the market, or used, if they contain, when hydrated, more than 2 mg/kg (0.0002 %) soluble chromium (VI) of the total dry weight of the cement.
2. If reducing agents are used, then without prejudice to the application of other Community provisions on the classification, packaging and labelling of substances and mixtures, suppliers shall ensure before the placing on the market that the packaging of cement or cement-containing mixtures is visibly, legibly and indelibly marked with information on the packing date, as well as on the storage conditions and the storage period appropriate to maintaining the activity of the reducing agent and to keeping the content of soluble chromium (VI) below the limit indicated in paragraph 1.
3. By way of derogation, paragraphs 1 and 2 shall not apply to the placing on the market for, and use in, controlled closed and totally automated processes in which cement and cement-containing mixtures are handled solely by machines and in which there is no possibility of contact with the skin.
4. The Standard for the examination of the content of water-soluble chromium VI of cement and cement-containing mixtures is approved by the European Committee for Standardization (CEN) as the standard method for documentation compliance with the requirements of the section 1.

The so-called “Good practice guides” which contain advice on safe handling practices can be found from: http://www.nepsi.eu/goodpractice-guide.aspx. These good practices have been adopted under the Social Dialogue "Agreement on Workers' Health Protection through the Good Handling and Use of Crystalline Silica and Products Containing it” by Employee and Employer European sectoral associations, among which CEMBUREAU.

Work environment
With some exceptions, it is forbidden for minors to work with this subject. (AFS 2012:3 Bil.1).

Swedish national legislation
Arbetsmiljöverkets författningssamling AFS 2018:1 – Hygieniska gränsvärden
Arbetsmiljöverkets författningssamling AFS 2012:3 – Minderårigas arbetsmiljö

Avfallsförordning SFS nr.: 2020:614

15.2 Chemical safety assessment

No chemical safety assessment has been carried out.

SECTION 16: OTHER INFORMATION

16.1 Indication of changes

Compared to the last version, UFI's have been introduced under point 1.1. This version complies with the requirements for the compilation of the safety data sheet according to Regulation (EU) 2020/878 of 18 June 2020.

16.2 Abbreviations and acronyms

ACGIH	American Conference of Industrial Hygienists
ADR/RID	European Agreements on the transport of Dangerous goods by Road/Railway
AFS	Arbetsmiljöverkets författningssamling
APF	Assigned Protection Factor
CAS	Chemical Abstracts Service
CLP	Classification, Labelling and Packaging (Regulation (EC) No 1272/2008)
COPD	Chronic Obstructive Pulmonary Disease
DNEL	Derived No-Effect Level
EC 50	Half maximal Effective Concentration
ECHA	European CHemicals Agency
EINECS	European INventory of Existing Commercial chemical Substances
EPA	Efficiency Particulate Air filter
ES	Exposure Scenario
EWC	European Waste Catalogue
FF P	Filtering Facepiece against Particles (disposable)
FM P	Filtering Mask against Particles with filter cartridge
HEPA	High Efficiency Particulate Air filter
H&S	Health and Safety
IATA	International Air Transport Association
IMDG	International agreement on the Maritime transport of Dangerous Goods
LC 50	Median lethal dose
MEASE	Metals Estimation and Assessment of Substance Exposure, EBRC Consulting GmbH for Eurometaux, http://www.ebrc.de/ebrc/ebrc-mease.php
MS	Member State
OELV	Occupational Exposure Limit Value
PBT	Persistent, Bio-accumulative and Toxic
PNEC	Predicted No-Effect Concentration
PROC	PROcess Category
RE	Repeated Exposure
REACH	Registration, Evaluation and Authorisation of Chemicals
RPE	Respiratory Protective Equipment
SCOEL	Scientific Committee on Occupational Exposure Limit values
SDS	Safety Data Sheet
SE	Single Exposure
STP	Sewage Treatment Plant
STOT	Specific Target Organ Toxicity
TLV-TWA	Threshold Limit Value-Time-Weighted Average
VLE-MP	Exposure limit value-weighted average in mg by cubic meter of air
vPvB	Very Persistent, very Bio-accumulative
w/w	Weight by weight
WWTP	Waste Water Treatment Plant

16.3 Process category and descriptors

For the professional user, the process categories and descriptors according to ECHA guidance R.12 (ECHA-2010-G-05) can be assigned to (s. Table)

PROC	Identified uses – Use description	Production	Prof. use of construction materials
2	Use in closed uninterrupted process with periodic performance control	X	X
3	Use in closed process	X	X
5	Mixing for production of new mixtures and products	X	X
7	Industrial pulverization		X
8a	Transportation of the mixture by commercial vessels and high-capacity containers using non-specific equipment.		X
8b	Transportation of the mixture by commercial vessels and high-capacity containers using specific equipment.	X	X
9	Placement of the mixture in small containers.	X	X
10	Rolling, brushing		X
11	Non-industrial pulverization		X
13	Cleaning of the products by submerging, rinsing		X
14	Production of the products and mixtures by means of compression, pelletization, granulation	X	X
19	Manual mixing in direct contact; available only for IAL		X
22	Potentially closed mineral/metal processing action at high temperatures in commercial equipment.		X
26	Operation with solid inorganic substances at room temperature	X	X

16.4 Relevant H-statements (number and full text)

H 315 Causes skin irritation
H 317 May cause an allergic skin reaction
H 318 Causes serious eye damage
H 335 May cause respiratory irritation
EUH 203 Contains chromium (VI). May cause allergic reactions.

16.5 Key literature references and sources of data

(1) Portland Cement Dust - Hazard assessment document EH75/7, UK Health and Safety Executive, 2006: http://www.hse.gov.uk/pubns/web/portlandcement.pdf.
(2) EH 40/2005 Workplace exposure limits; HSE-Books, second edition 2011 (ISBN 978 0 7176 6446 7.
(3) MEASE 1.02.01 Exposure assessment tool for metals and inorganic substances, EBRC Consulting GmbH für Eurometaux, 2010: http://www.ebrc.de/tools/mease.php.
(4) Observations on the effects of skin irritation caused by cement, Kietzman et al, Dermatosen, 47, 5, 184-189 (1999).
(5) 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.
(6) 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).
(7) 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).
(8) 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. 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) European Commission's Scientific Committee on Toxicology, Ecotoxicology and the Environment (SCTEE) opinion of the risks to health from Cr (VI) in cement (Europäische Kommission, 2002): http://ec.europa.eu/health/archive/ph_risk/committees/sct/documents/out158_en.pdf.
(13) 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.

(14) Cytotoxicity and genotoxicity of cement dusts in A549 human epithelial lung cells in vitro; Gminski et al, Abstract DGPT conference Mainz, 2008.
(15) 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.
(16) 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.
(17) Occurrence of allergic contact dermatitis caused by chromium in cement. A review of epidemiological investigations, Kåre Lenvik, Helge Kjuus, NIOH, Oslo, December 2011.
(18) ECHA Support Questions and answers agreed with National Helpdesks. ID1695 May 2020. https://echa.europa.eu/es/support/qas-support/qas-agreed-with-national-helpdesks.

16.6 Methods in accordance with Article 9 of Regulation (EC) 1272/2008 (CLP) to evaluate the information for classification purposes

The review was conducted in accordance with Article 6, paragraph 5 and Annex I to Regulation (EC) No. 1272/2008.

16.7 Training advice

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

16.8 Disclaimer

The information on this data sheet reflects the currently available knowledge and is reliable provided that the product is used under the prescribed conditions and in accordance with the application specified on the packaging and/or in the technical guidance literature. Any other use of the product, including the use of the product in combination with any other product or any other process, is the responsibility of the user.
It is implicit that the user is responsible for determining appropriate safety measures and for applying the legislation covering his/her own activities.