

Date: 30.12.2015

(\*) concerns only chemical notification

(\*\*) either 3.1 or 3.2 must be filled

Previous date: 13.8.2015

**SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING****1.1 Product identifier**

**Trade name / Substance name** Valkosementti CEM I 52,5 R – SR5  
**Company product code** Not applicable  
**REACH Registration number** Not applicable

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

**The uses of the chemical** Common cement is used as an hydraulic binder for the production of concrete, mortars, grouts and for soil stabilization

**Classification of economic activities (NACE) (\*)** C236 Manufacture of articles of concrete, cement and plaster  
F429 Construction of other civil engineering projects

**Use categories (UC62) (\*)** 13: Construction material

**The chemical can be used by the general public (\*)**

**The chemical is used by the general public only (\*)**

**1.3 Details of the supplier of the Safety Data Sheet**

**Supplier (manufacturer, importer, only representative, downstream user, distributor)  
Responsible for placing a chemical on the market in Finland (\*)**

**Street address** Finnsementti Oy  
Skräbbölentie 18  
**Postcode and post office** 21600 PARAINEN  
**Post-office box**  
**Postcode and post office**  
**Telephone number** 0201 206 200  
**Telefax**  
**E-mail address** info@finnsementti.fi  
**Finnish Business ID (Y code) (\*)** 1628387-7

**1.4 Emergency telephone number**

Poison Information Centre Tel. +358 9 471 977 (direct) or +358 9 4711 (exchange)

**SECTION 2: HAZARDS IDENTIFICATION****2.1 Classification of the substance or mixture**

Hazard class	Hazard category	Classification procedure
Skin irritation	2	On the basis of test data
Serious eye damage/eye irritation	1	On the basis of test data
Specific target organ toxicity single exposure respiratory tract irritation	3	On the basis of literature survey

## 2.2 Label elements



Danger

Hazard statements:

H318 Causes serious eye damage

H315 Causes skin irritation

H335 May cause respiratory irritation

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/vapours/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.

P501: Dispose product according to proper regulations

Cement dust may cause respiratory irritation.

When cement reacts with water or when cement becomes damp, a strong alkaline solution is produced. Due to the high alkalinity, wet cement may provoke skin and eye irritation.

Cement may also cause an allergic reaction in some individuals due to the Cr(VI) content. Reducing agents have been added to control the levels of sensitising soluble chromium (VI) to below 2mg/kg (0.0002%) of the total dry weight of the cement.

Additional information: Skin contact wet cement, fresh concrete or mortar, can cause irritation, The skins-inches or corrosion. May be corrosive to aluminum and other base 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).

## SECTION : COMPOSITION / INFORMATION ON INGREDIENTS

### 3.1 Substances (\*\*)

Main constituent / constituent	CAS-, EC- or index number	Concentration

**3.2 Mixtures (\*\*)**

Substance name	CAS-, EC- or index num- ber	REACH Registration No.	Concent- ration	Classification Regulation 1272/2008	
				Hazard class, category	Hazard statement
Portland cement clinker	65 997-15-1	Not applicable	>95 %	Skin irritation 2 Serious eye dam- age/eye irritation 1 Respiratory irritation 3	H318 Causes seri- ous eye damage H315 Causes skin irritation H335 May cause respiratory irritati- on
Gypsum	7778-18-9	01-2119444918-26- ....	3-5 %	Not applicable	Not applicable

**SECTION 4: FIRST AID MEASURES****4.1 Description of first aid measures****General notes**

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

**Eye contact**

Do not rub eyes in order to avoid possible cornea damage as a result of mechanical stress. Remove contact lenses if any. Flush eye(s) immediately by thoroughly rinsing with plenty of clean water for at least 20 minutes to remove all particles. Contact a specialist of occupational medicine or an eye special-ist.

**Skin contact**

For dry cement, remove and rinse abundantly with water.  
For wet cement, wash skin with plenty of water.  
Remove contaminated clothing, footwear, watches, etc. and clean thoroughly before re-using them.  
Seek medical treatment in all cases of irritation or burns

**Inhalation**

Move the person to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists.

**Ingestion**

Do not induce vomiting. If the person is conscious, wash out mouth with water and give couple of glasses of water to drink. Contact a physician.

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

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

**Skin:** Cement may have an irritating effect on moist skin (due to sweat or humidity) after prolonged contact or may cause contact dermatitis after repeated contact. Prolonged skin contact with wet cement or wet concrete may cause serious burns because they develop without pain being felt (for example when kneeling in wet concrete even when wearing trousers).

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

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

Cement may irritate skin, respiratory system and eyes. Due to the high alkalinity, wet cement may provoke skin and eye irritation. Eye contact with cement (dry or wet) may cause serious and potentially irreversible injuries.

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

When contacting a physician, take this SDS with you.

**SECTION 5: FIREFIGHTING MEASURES**

**5.1 Extinguishing media**

Common cements are not flammable.

**5.2 Special hazards arising from the substance or mixture**

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

**5.3 Advice for firefighters**

Cement poses no fire-related hazards. No need for special protective equipment for fire fighters.

**SECTION 6: ACCIDENTAL RELEASE MEASURES**

**6.1 Personal precautions, protective equipment and emergency procedures**

Wear protective equipment as described under Section 8 and follow the advice for safe handling and use given under Section 7

However, respiratory protection is needed in situations with high dust levels.

**6.2 Environmental precautions**

Do not wash cement down sewage and drainage systems or into bodies of water (e.g. streams).

**6.3 Methods and material for containment and cleaning up**

Collect the spillage in a dry state if possible.

Dry cement: Use cleanup methods such as vacuum clean-up or vacuum extraction (Industrial portable units, equipped with high efficiency particulate filters (HEPA filter) 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. When wet cleaning or vacuum cleaning is not possible, ensure that the workers wear the appropriate personal protective equipment and prevent dust from spreading. Place spilled materials into a container. Solidify before disposal.

Wet cement: Clean up wet cement and place in a container. Allow material to dry and solidify before disposal.

**6.4 Reference to other sections**

Additional information under Sections 7, 8 and 13.

**SECTION 7: HANDLING AND STORAGE**

**7.1 Precautions for safe handling**

Do not handle or store near food, beverages or tobacco products.

Avoid formation of dust. Follow the instructions in sections 6.3 and 8.

Wear safety goggles and a respirator mask if dust is therefore necessary. Use protective gloves and avoid skin contact.

**7.2 Conditions for safe storage, including any incompatibilities**

Bulk cement is stored in a dry, watertight and clean silo, where the cement contamination can be avoided. Do not go to the closed state e.g. a silo, tank or other container that contains the cement. Cement can be adhered to the container walls and cement can be drop or fall unpredictably.

Packaged cement is stored unopened in a poke cool and dry place off the ground and protected from excessive drafts.

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Aluminum containers can not be used.

**7.3 Specific end use(s)**

Not applicable

**7.4 Control of soluble Cr (VI)**

Cements treated with a Cr (VI) reducing agent effectiveness 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.

**SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

**8.1 Control parameters**

**National occupational exposure limit values**

Sementtipöly (hengittyvä pöly): 5 mg/m<sup>3</sup> / 8h

Sementtipöly (alveolijae): 1 mg/m<sup>3</sup> / 8h

**Other limit values**

Not applicable

**DNEL-arvot**

Not applicable

**PNEC-arvot**

Not applicable

**8.2 Exposure controls**

**8.2.1 Appropriate engineering controls**

Exposure controls is described in the exposure scenarios in the Annex.

**8.2.2 Individual protection measures such as personal protection equipment**

**General**

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

**Engineering controls**

Dust problem will be minimized with good ventilation, dust extraction and dry cleaning methods, which will not generate dust.



**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 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 skincare 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. For the gloves, respect the maximum wearing time to avoid skin problems.

**Respiratory protection**

When a person is potentially exposed to dust levels above exposure limits, use appropriate respiratory protection.

**Thermal hazards**

Not applicable.

**Environmental exposure controls**

Do not wash cement into sewage systems or into bodies of water

Use	PROC*	Ex- posure	Specification of respiratory protective equipment (RPE)	RPE efficiency
Industrial manufac- ture/formulation of hydraulic building and construction materials	2, 3	Duration is not restricted (up to 480 minutes per shift, 5 shifts a week)	not required	-
	14, 26		A) P1 mask (FF, FM) or B) not required	APF = 4 -
	5, 8b, 9		A) P2 mask (FF, FM) or B) P1 maski (FF, FM)	APF = 10 APF = 4
Industrial uses of dry hy- draulic building and con- struction 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 maski (FF, FM)	APF = 10 APF = 4
Industrial uses of wet suspension of hydraulic building and construction materials	7		A) P1 mask (FF, FM) or B) not required	APF = 4 -
	2, 5, 8b, 9, 10, 13, 14		not required	-
Professional use of dry hydraulic building and construction material (in- door,outdoor)	2		P1 mask (FF, FM)	APF = 4
	9, 26		A) P2 mask (FF, FM) or B) P1 maski (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	-	

**8.2.3 Environmental exposure controls**

Do not wash cement into sewage systems or into bodies of water.

**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES****9.1 Information on basic physical and chemical properties**

<b>Appearance</b>	finely ground inorganic material, grey or white
<b>Odour</b>	odourless
<b>Odour threshold</b>	No threshold
<b>pH</b>	11-13.5 (T = 20°C in water, water-solid ratio 1:2):
<b>Melting point/freezing point</b>	Not applicable
<b>Initial boiling point and boiling range</b>	Not applicable as under normal atmospheric conditions, melting point >1 250°C
<b>Flash point</b>	Not applicable as is not a liquid
<b>Evaporation rate</b>	Not applicable as is not a liquid
<b>Flammability (solid, gas)</b>	Not applicable as is a solid which is non combustible and does not cause or contribute to fire through friction
<b>Upper/lower flammability or explosive limits</b>	Not applicable as is not a flammable gas
<b>Vapour pressure</b>	Not applicable as melting point > 1250 °C
<b>Vapour density</b>	Not applicable as melting point > 1250 °C
<b>Relative density</b>	3,0..3,2 g/cm <sup>3</sup> , bulk density 1,1..1,4 g/cm <sup>3</sup>
<b>Solubility(ies)</b>	sligth solubility in water
<b>Partition coefficient: n-octanol/water</b>	Not applicable as is inorganic substance
<b>Auto-ignition temperature</b>	Not applicable
<b>Decomposition temperature</b>	Not applicable as no organic peroxide present
<b>Viscosity</b>	Not applicable as not a liquid
<b>Explosive properties</b>	Not applicable
<b>Oxidising properties</b>	Not applicable

**9.2 Other information**

Not applicable

**SECTION 10: STABILITY AND REACTIVITY****10.1 Reactivity**

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

**10.2 Chemical stability**

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

Wet cement is alkaline and incompatible with acids, with ammonium salts, with aluminium or other non-noble metals. Cement dissolves in hydrofluoric acid to produce corrosive silicon tetrafluoride gas. Cement reacts with water to form silicates and calcium hydroxide. Silicates in cement react with powerful oxidizers such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and

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oxygen difluoride.

<b>10.3</b>	<b>Possibility of hazardous reactions</b>
	Uncontrolled use of aluminium powder in wet cement should be avoided as hydrogen is produced.
<b>10.4</b>	<b>Conditions to avoid</b>
	Humid conditions during storage may cause lump formation and loss of product quality.
<b>10.5</b>	<b>Incompatible materials</b>
	Wet cement is incompatible with acids, with ammonium salts, with aluminium or other non-noble metals. Uncontrolled use of aluminium powder in wet cement should be avoided as hydrogen is produced.
<b>10.6</b>	<b>Hazardous decomposition products</b>
	Cements will not decompose into any hazardous products.

## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

Hazard class	Category	Effect	Ref. 16.3
Acute toxicity - dermal	-	Limit test, rabbit, 24 hours contact, 2,000 mg/kg body weight – no lethality. Based on available data, the classification criteria are not met.	(2)
Acute toxicity- inhalation	-	No acute toxicity by inhalation observed. Based on available data, the classification criteria are not met.	(9)
Acute toxicity - oral	-	No indication of oral toxicity from studies with cement kiln dust. Based on available data, the classification criteria are not met.	Literature survey
Skin corrosion/ irritation	2	Cement in contact with wet skin may cause thickening, cracking or fissuring of the skin. Prolonged contact in combination with abrasion may cause severe burns.	(2) Human experience
Serious eye damage/irritation	1	Portland cement clinker caused a mixed picture of corneal effects and the calculated irritation index was 128. Common cements contain varying quantities of Portland cement clinker, fly ash, blast furnace slag, gypsum, natural pozzolans, burnt shale, silica fume and limestone. Direct contact with cement may cause corneal damage by mechanical stress, immediate or delayed irritation or inflammation. Direct contact by larger amounts of dry cement or splashes of wet cement may cause effects ranging from moderate eye irritation (e.g. conjunctivitis or blepharitis) to chemical burns and blindness.	(10), (11)
Skin sensitisation	-	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 those two 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	(3), (4)



		not expected [Reference (3)].	
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.	(12), (13)
Carcinogenicity	-	No causal association has been established between Portland cement exposure and cancer.	(1)
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	-	There is an indication of COPD. The effects are acute and due to high exposures. No chronic effects or effects at low concentration have been observed.  Based on available data, the classification criteria are not met.	(15)
Aspiration hazard	-	Not applicable as cements are not used as an aerosol.	

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.

## SECTION 12: ECOLOGICAL INFORMATION

### 12.1 Toxicity

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

### 12.2 Persistence and degradability

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

### 12.3 Bioaccumulative potential

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

### 12.4 Mobility in soil

Dry cement might become airborne during handling operations. Mobility in soil is not relevant. After hardening, cement presents no toxicity risks.

### 12.5 Results of PBT and vPvB assessment

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

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<b>12.6</b>	<b>Other adverse effects</b>
	Not relevant

<b>SECTION 13: DISPOSAL CONSIDERATIONS</b>
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<b>13.1</b>	<b>Jätteiden käsittelymenetelmät</b>
	Dry cement: place spilled materials into a container Cement that has exceeded its shelf life shall not be used/sold. Dispose of according to the local legislation. Do not dispose of into sewage systems or surface waters. Wet cement or slurry: Allow to harden and dispose of according to the local legislation.

<b>SECTION 14: TRANSPORT INFORMATION</b>
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Cement is not covered by the international regulation on the transport of dangerous goods (IMDG, IATA, ADR/RID), therefore no classification is required.

<b>14.1</b>	<b>UN number</b>
	Not relevant

<b>14.2</b>	<b>UN proper shipping name</b>
	Not relevant

<b>14.3</b>	<b>Transport hazard class(es)</b>
	Not relevant

<b>14.4</b>	<b>Packing group</b>
	Not relevant

<b>14.5</b>	<b>Environmental hazards</b>
	Not relevant

<b>14.6</b>	<b>Special precautions for user</b>
	Not relevant

<b>14.7</b>	<b>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</b>
	Not relevant

<b>SECTION 15: REGULATORY INFORMATION</b>
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<b>15.1</b>	<b>Safety, health and environmental regulations/legislation specific for the substance or mixture</b>
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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). However, some substances in the mixture cement might require registration and an exposure scenario. The necessary exposure scenarios will be added in the annex to this SDS as soon as these substances have been registered and the exposure scenarios have been received from the registrant. 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.

Flue-dust is registered according to (EC) 1907/2006 and it has also constructed an exposure scenario.

**15.2 Chemical safety assessment**

Not applicable

**SECTION 16: OTHER INFORMATION**

**16.1 Indication of changes**

Section 2

**16.2 Abbreviations and acronyms**

none

**16.3 Key literature references and sources of data**

Guidelines for the Safety data sheet template for Common Cements, Cembureau 2010

Commission Regulations (EU) No 552/2009

- (1) *Portland Cement Dust - Hazard assessment document EH75/7*, UK Health and Safety Executive, 2006. Available from: <http://www.hse.gov.uk/pubns/web/portlandcement.pdf>.
- (2) *Observations on the effects of skin irritation caused by cement*, Kietzman et al, *Dermatosen*, 47, 5, 184-189 (1999).
- (3) *European Commission's Scientific Committee on Toxicology, Ecotoxicology and the Environment (SCTEE) opinion of the risks to health from Cr (VI) in cement* (European Commission, 2002). [http://ec.europa.eu/health/archive/ph\\_risk/committees/sct/documents/out158\\_en.pdf](http://ec.europa.eu/health/archive/ph_risk/committees/sct/documents/out158_en.pdf).
- (4) *Epidemiological assessment of the occurrence of allergic dermatitis in workers in the construction industry related to the content of Cr (VI) in cement*, NIOH, Page 11, 2003.
- (5) *U.S. EPA, Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, 3rd ed. EPA/600/7-91/002, Environmental Monitoring and Support Laboratory, U.S. EPA, Cincinnati, OH (1994a).
- (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).
- (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.

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- (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) *Prospective monitoring of exposure and lung function among cement workers, Interim report of the study after the data collection of Phase I-II 2006-2010*, Hilde Notø, Helge Kjuus, Marit Skogstad and Karl-Christian Nordby, National Institute of Occupational Health, Oslo, Norway, March 2010.

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**16.4 Training advice for workers**

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.

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**16.5 Further information**

Finnsementti Oy  
Tekninen neuvonta  
21600 Parainen  
puh: 0201 206 200

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.

## ANNEX: Exposurescenario (flue-dust) and preventing exposure

Table 1.

Exposurescenario	Process category 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		ei vaadittu	-
	14, 22, 26		A) not required or B) generic local exhaust ventilation	- 78 %
	5, 8b, 9		A) general ventilation or B) generic local exhaust ventilation	17 % 78 %
Industrial uses of wet suspension of hydraulic building and construction materials	7		A) not required or B) generic local exhaust ventilation	- 78 %
	2, 5, 8b, 9, 10, 13, 14		not required	-
Professional use of dry hydraulic building and construction material (indoor, outdoor)	2		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	- 87 %
	19		localised controls are not applicable, process only in good ventilated rooms or outdoor	50 %
Professional uses of wet suspensions of hydraulic building and construction materials	11	A) not required or B) generic local exhaust ventilation	- 72 %	
	2, 5, 8a, 8b, 9, 10, 13, 14, 19	not required	-	

\* PROC's are identified uses and defined in Table 3.

Table 2.

Exposure scenario	Process category PROC*	Exposure	Specification of respiratory protective equipment (RPE)	RPE 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) P1 mask (FF, FM) or B) not required	APF = 4 -
	5, 8b, 9		A) P2 mask (FF, FM) or B) P1 maski (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 maski (FF, FM)	APF = 10 APF = 4
Industrial uses of wet suspension of hydraulic building and construction materials	7		A) P1 mask (FF, FM) or B) not required	APF = 4 -
	2, 5, 8b, 9, 10, 13, 14		not required	-
Professional use of dry hydraulic building and construction material (indoor, outdoor)	2		P1 mask (FF, FM)	APF = 4
	9, 26		A) P2 mask (FF, FM) or B) P1 maski (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 Table 3.

### General

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

### Engineering controls

Dust problems will be minimized with good ventilation, dust extraction and dry cleaning methods, which will not generate dust.

**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 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 skincare 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. For the gloves, respect the maximum wearing time to avoid skin problems.

**Respiratory protection**

When a person is potentially exposed to dust levels above exposure limits, use appropriate respiratory protection.

**Table 3.**

PROC	Identified Uses - Use Description	Manufacture/ Formulation of building and construction materials	Professional/ Industrial use of
PROC2	Use in closed, continuous process with occasional controlled exposure, eg industrial or professional manufacture of hydraulic binders	X	X
PROC3	Use in closed batch process, eg industrial or professional manufacture of ready-mix concrete	X	X
PROC5	Mixing or blending in batch process for formulation of mixtures and articles, eg industrial or professional manufacture of pre-cast concrete	X	X
PROC7	Industrial spraying, eg industrial use of wet suspensions of hydraulic binders by spraying		X
PROC8a	Transfer of substance or mixture from/to vessels/large containers at non-dedicated facilities, eg use of cement in bags to prepare mortar		X
PROC8b	Transfer of substance or mixture from/to vessels/large containers a dedicated facilities, eg filling of silos, trucks or barges at cement plants	X	X
PROC9	Transfer of substance or mixture into small containers, eg filling of cement bags in cement plants	X	X
PROC10	Roller application or brushing, eg products to improve adherence between building surfaces and finishing products		X
PROC11	Non-Industrial spraying, eg professional use of wet suspensions of hydraulic binders by spraying		X

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PROC13	Treatment of articles by dipping and pouring, eg covering of construction products with a layer to improve the performance of the product		X
PROC14	Production of preparations or articles by tableting, compression extrusion, pelletisation	X	X
PROC19	Hand-mixing with intimate contact and only PPE available		X
PROC22	Potentially closed processing operations with minerals/metals at elevated temperature in industrial setting, eg production of bricks		X
PROC26	Handling of solid inorganic substances at ambient temperature, eg mixture of wet hydraulic binders	X	X