

Safety Data Sheet

According to 1907/2006/EC, Article 31

Product Identifier

EWI-060 MINERAL RENDER

Revision: 5.01.2018

Printing date 5.01.2018

Version number: RD/15

Section 1

Identification of the substance/mixture and of the manufacturer/ product distributor

1.1 Product identifier

Trade name: EWI-060 MINERAL RENDER

1.2 Correct/incorrect uses of substance/mixture

Application of the substance / the preparation

Render finish - this product is used for coating building surfaces.

This product should not be used for any other purpose.

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier:

KREISEL - Technika Budowlana Sp. z o.o.

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1.4 Emergency telephone number

Environment Agency Emergency Hotline: +44/(0)800 80 70 60

Emergency Services (UK): 999

Section 2

Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008



GHS05 corrosion

Eye Dam. 1 H318 Causes serious eye damage.



GHS07 WARNING

Skin Irrit. 2 H315 Causes skin irritation.
Skin Sens. 1 H317 May cause an allergic skin reaction.
STOT SE 3 H335 May cause respiratory irritation.

Additional information:

The classification in terms of skin and eye irritation is based on the results of animal studies, see section 16 literature [4], [11] and [12].

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008

The product is classified and labelled according to the CLP regulation.

Hazard pictograms



GHS05



GHS07

Signal word

Danger

Hazard-determining components of labelling:

Calcium dihydroxide

Portland cement clinker

Precautionary statements:

P102 - Keep out of reach of children.

P261 - Avoid inhaling dust.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if possible. Continue rinsing.

P315 Seek immediate medical advice/attention.

P302+P352 IF ON SKIN: Wash with plenty of soap and water.

P332+P313 If skin irritation occurs: Seek medical advice/attention.

P362+P364 Take off contaminated clothing and wash before re-use.

P304+P340 IF INHALED: Move into well-ventilated area for ease of breathing.

P501 Dispose of contents/container to an appropriate waste collection point.

2.3 Other hazards

As soon as the dry mixture comes into contact with water or humidity, a strongly alkaline solution will be formed. Wet mortar may cause skin and eye irritation due to its high alkalinity. Prolonged contact (e.g. knees in wet mortar) increases the risk of serious skin damage due to the alkalinity. The amount of respirable, crystalline siliciumdioxide amounts below 1%. The product is not subject to a declaration obligation. However, the use of breathing protection is advisable. Dust from the dry mixture can cause respiratory irritation. Frequent inhalation of large amounts of dust increases the risk of developing lung diseases. The mixture is chromate reduced and therefore, there is no risk of sensitisation by chromate. The ready-to-use product (after the addition of water) contains a maximum 0,0002% of soluble chromium(VI) based on the dry weight of the cement. Proper dry storage and compliance with the maximum storage time is required for an effective chromate reduction.

Results of PBT and vPvB assessment

Section 3

Composition/information on ingredients

3.1 Chemical characterisation: Substances

This product is a mixture.

3.2 Chemical characterisation: Mixtures

Description: Mixture of inorganic binders, fillers and nonhazardous additions.

Dangerous components:		
CAS: 1305-62-0 EINECS: 215-137-3 Reg.nr.: 01-2119475151-45	Calcium dihydroxide ☞ Eye Dam. 1, H318; ☞ Skin Irrit. 2, H315; STOT SE 3, H335	10-25%
CAS: 65997-15-1 EINECS: 266-043-4 Reg.nr.: 02-2119682167-31	Portland cement clinker ☞ Eye Dam. 1, H318; ☞ Skin Irrit. 2, H315; Skin Sens. 1, H317; STOT SE 3, H335	2.5-10%
Other components (>10%)		
CAS: 1317-65-3 EINECS: 215-279-6 Reg.nr.: -	Limestone (Calcium carbonate)	50-100%

Section 4

First aid measures

4.1 Description of first aid measures

General information:

For first responder no special personal protective equipment is required. First responder should avoid contact with the product where possible.

After inhalation:

Move the person into fresh air away from dust. If discomfort, coughing or persistent irritation, seek medical attention.

After skin contact:

Immediately wash with water and soap and rinse thoroughly. Immediately remove all soiled and contaminated clothing. Wash contaminated clothes before re-use. Clean contaminated shoes before re-use. If skin irritation continues, consult a medical professional.

After eye contact:

Do not rub eyes because this can cause additional damage. If necessary, remove contact lenses and immediately rinse the eye with water, or if possible, with isotonic eyewash solution (e.g. 0.9% NaCl). Always consult a medical professional.

After swallowing:

Do not induce vomiting. If physically able, rinse mouth with water and drink plenty of water. Consult a medical professional or poison control center.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms and effects are described in section 2 and 11.

Eye contact with the product may cause serious and potentially permanent damage. Prolonged contact with the product in its dry state can also have an irritant effect on moist skin. Contact with skin may cause skin irritation, dermatitis or other serious skin damage.

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

If it is necessary to seek medical attention, this safety data sheet should be presented to the medical professional.

Section 5

Firefighting measures

5.1 Extinguishing media

Suitable extinguishing agents:

The mixture is fire resistant in both delivery condition and mixed condition. In the event of a fire, the mixture will not need extinguishing.

5.2 Special hazards arising from the substance or mixture

This product is neither explosive nor flammable, and non-oxidizing with other materials. Dust formations react alkaline with water and can cause a fire risk.

5.3 Advice for firefighters

No special measures required. Collect contaminated fire fighting water separately. It must not enter the sewage system. Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

Section 6

Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Avoid formation of dust. Avoid inhalation, eye and skin contact. If appropriate, reference must be made to exposure controls and personal protection (see section 8).

6.2 Environmental precautions

Do not allow product to reach water because an increase of pH may be caused. Ecotoxicological effects may occur when the pH-value is above 9. National regulations for waste water and groundwater are to be observed.

6.3 Methods and material for containment and cleaning up

Collect spilled dry material dry and use if possible. Avoid formation of dust. For cleaning use an industrial vacuum (DIN EN 60335-2-69). Do not dry sweep. Never use compressed air for cleaning. It is necessary to use personal protective equipment during dry cleaning in case of dust exposure and inhalation. Avoid inhalation of emerging dust and contact with skin. Dispose of the material collected according to regulations. Let the mixed mortar solidify and dispose of (see section 13.1).

6.4 Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

Section 7

Handling and storage

7.1 Precautions for safe handling:

Ensure good ventilation at the workplace. Prevent formation of dust. Avoid contact with the eyes and skin. Wear protective clothing. Washing facilities / water for cleaning eyes and skin should be available. People with skin diseases or other hypersensitivity reactions of the skin, should not handle the product. Do not drink, smoke or sniff the product. Do not use products after the specified storage period, because the effect of the reducing agent decreases and the content of soluble chromium (VI) may exceed those limits mentioned in section 2.3. In these cases an allergic Chromate dermatitis may be developed with prolonged contact due to the water-soluble chromate contained in the product.

Information about fire - and explosion protection:

No special measures required.

7.2 Conditions for safe storage, including any incompatibilities

Storage:

Requirements to be met by storerooms and containers:

Keep out of reach of children. Store in cool, dry place in tightly closed containers. Do not use aluminium foil containers.

Information about storage in one common storage facility:

Keep away from food and drink.

Further information about storage conditions:

Store dry. Prevent ingress of water and moisture. Always keep in original container. Improper storage (ingress of moisture) or exceeding the maximum storage period, can subside the effect of contained chromate reducer (see section 7.1).

Minimum storage temperature:

Minimum storage temperature (+5 °C up to 25 °C): See indication on package.

Storage class: 13

7.3 Specific end use(s)

No further relevant information available.

Section 8

Exposure controls/personal protection

8.1 Control parameters

DNELs		
1305-62-0 Calcium dihydroxide		
Inhalative	DNEL (8h) DNEL (15min.) 4 mg/m ³ (Workers)	1 mg/m ³ (Workers) 4 mg/m ³ (Workers)
Additional Occupational Exposure Limit Values for possible hazards during processing:		
Components with general dust limit		
MAK D (TRGS 900) (PL)	Short-term value: 2.5 A 20 E mg/m ³ Long-term value: 1.25 A 10 E mg/m ³ A - IFA 6068 (2003) E - IFA 7284 (2003) Germany	

A - Alveoles passing particles E - Respirable particles (DIN EN 481)

Additional information:

During manufacture, the valid lists were used as a guidance only.

8.2 Exposure controls

8.2.1. Personal protective equipment

General protective and hygienic measures:

Keep away from food and drink. Remove contaminated clothing immediately and thoroughly clean it before using it again. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin. Do not eat, drink, smoke or sniff the product while working. For any skin sensitivities use skin protection cream. Ensure that washing facilities are available in the work place.



Respiratory protection:

Particle filtering half mask (FFP2 according to EN 149). Compliance with the Occupational Exposure Limits are to be ensured through effective procedures, such as local exhaust ventilation. If there is a risk of exceeding the exposure limits, e. g. the open fiddling with the powdered dry product or during processing by splash, an appropriate respirator must be used.



Protection of hands:

Hand protection: Chemical resistant protective gloves according EN 374
Wear waterproof, abrasion and alkali-resistant protective gloves with CE marking. leather gloves are not suitable on the basis of their water permeability and they can release chromate-containing compounds.

Material of gloves:

The glove material has to be impermeable and resistant to the product. No recommendation to the glove material can be given for the product. Select the glove material on consideration of the penetration times, rates of diffusion and the degradation. Check protective gloves are in good condition before use. Preventative skin protection by use of skinprotecting agents is recommended. To avoid skin problems reduce the wearing of gloves to the required minimum.

Penetration time of glove material:

Check with the glove manufacturer for exact break through times.

For the permanent contact gloves made of the following materials are suitable:

Nitrile rubber, NBR gloves

Synthetic rubber gloves

PVC gloves

Recommended thickness of the material: $\geq 0,15\text{mm}$

Gloves made of the following materials are not suitable:

Leather gloves



Eye protection:

In case of dust development or splash risk use tightly fitting safety goggles according to EN 166.



Body protection:

Wear protective long-sleeved clothing and tight shoes. If contact with fresh mortar is unavoidable, the protective clothing should also be waterproof. Make sure that no fresh mortar from above gets into the shoes or boots.

Risk management measures:

Operator training in the correct use of personal protective equipment is necessary to ensure the required level of effectiveness.

8.2.2. Information about design of technical facilities

For reduction of dust formation, closed systems (e. g. silo with conveyor) local exhaust or other engineering controls such as plastering machines or continuous mixers with special additional equipment for dust detection should be used

8.2.3. Limitation and supervision of exposure into the environment

Do not allow product to reach water because an increase of pH may be caused. Ecotoxicological effects may occur when the pH-value is above 9. National regulations for waste water and groundwater are to be observed.

Section 9

Physical and chemical properties

9.1 Information on basic physical and chemical properties

General Information	
Appearance:	
Form	Powder
Colour	Different according to colouring
Odour	Odourless
pH-value at 20 °C (68 °F)	11.5-13 Saturated aqueous solution
Change in condition Initial boiling point and boiling range:	102 - 105 °C (216 - 221°F)
Change in condition Melting point/freezing point: Initial boiling point and boiling range:	> 1300 °C (> 2372 °F) Not applicable
Flash point	Not applicable.
Flammability (solid, gas)	Product is not flammable.
Ignition temperature	Not applicable.
Decomposition temperature	>825°C to CaO and CO ₂
Auto-ignition temperature	Product is not self-igniting.
Explosive properties	Product does not present an explosion hazard.
Density	Not determined.
Bulk density at 20 °C (68 °F):	1100 - 1300 kg/m ³
Solubility in / Miscibility with water:	Slightly soluble
Solvent content: Organic solvents: VOC (EC)	0.0 % 0.00 %
Solubility in / Miscibility with water:	Fully miscible.
Solids content:	100.0 %

9.2 Other information

No further relevant information available.

Section 10

Stability and reactivity

10.1 Reactivity

No dangerous reactions known.

10.2 Chemical stability:

The product is stable as long as it is stored properly and dry.

Thermal decomposition / conditions to be avoided:

No decomposition if used according to specifications.

10.3 Possibility of hazardous reactions

No dangerous reactions known.

10.4 Conditions to avoid

No further relevant information available.

10.5 Incompatible materials

No further relevant information available.

10.6 Hazardous decomposition products

No dangerous decomposition products known.

Additional information:

The mixture is chromate reduced. The ready-to-use product (after the addition of water) contains a maximum 2 mg/kg dissolvable chrom(VI) related to the dry mass. Presupposition for the chromate reduction is the appropriate storage under consideration of the maximum storage life.

Minimum storage temperature:

Minimum storage temperature (+5 °C up to 25 °C): See indication on package.

Section 11

Toxicological information

11.1 Information on toxicological effects

The product was not investigated. The statement is derived from the properties of the single components.

Acute toxicity:

Based on available data, the classification criteria are not met.

LD/LC50 values relevant for classification		
1317-65-3 Limestone (Calcium carbonate)		
Oral	LC50	6450 mg/kg (Rat) (RTECS Data)
1305-62-0 Calcium dihydroxide		
Oral	LC50	7340 mg/kg (Rat) (OECD 425) >2500 mg/kg (Rabbit) (OECD 402)
Dermal	LD50	>2500 mg/kg (Rabbit) (OECD 402)
65997-15-1 Portland cement clinker		
Oral	LD50	>2000 mg/kg (Mouse) In animal studies with cement dust no acute toxicity was observed. On the basis of the available data, the classification criteria are not fulfilled.
Dermal	LD0 (no lethality)	2000 mg/kg (Rabbit) (Limit test 24h [4]) On the basis of the available data, the classification criteria are not fulfilled.
Inhalation	LD0 (no lethality)	5 mg/m ³ (Rat) (Limit test [10]) On the basis of the available data, the classification criteria are not fulfilled.

Primary irritant effect:**On the skin:**

Cement has a skin irritant effect. Skin contact with wet or dry cement may lead to different irritant and inflammatory skin reactions, e. g. Redness and cracking. Prolonged contact in combination with abrasion can cause serious skin damage, see section 16 literature [4]. Calcium dihydroxide is irritating to skin (in vivo, rabbit). As a result of studies calcium dihydroxide is classified as irritating to skin (H315 - Causes skin irritation).

On the eye:

The in vitro test showed Portland cement clinker had varying degrees of impact on the cornea. The calculated "irritation index" is 128. If cement comes into contact with the eye area, do not rub the eyes as this can cause irritation, inflammation and corneal damage. Direct contact with large amounts of dry or wet cement may cause effects such as moderate eye irritation to serious eye damage and blindness, see Section 16 References [11] and [12]. As a result of studies (in vivo, rabbit) calcium dihydroxide can cause serious eye damage (H318 - Causes serious eye damage).

Sensitisation:

May cause an allergic skin reaction.

Subacute to chronic toxicity:

Long-term exposure to skin can cause serious skin damage. The contact with wet cement may cause skin eczema on some individuals. This can be triggered either by the pH (irritant contact dermatitis) or by immunological reaction of water soluble chromium(VI) (allergic contact dermatitis), see section 16 literature [5] and [13].

Germ cell mutagenicity:

Based on available data, the classification criteria are not met.

Carcinogenicity:

Based on available data, the classification criteria are not met.

Reproductive toxicity:

Based on available data, the classification criteria are not met.

Specific target organ toxicity - single exposure (STOT SE):

Exposure to cement dust may cause irritation of the respiratory system. Coughing, sneezing, and shortness of breath may be the result if exposure is above the occupational exposure limit, see Section 16 References [1]. Calcium dihydroxide is irritating to the respiratory tract (STOT SE 3 / H335 - May cause respiratory irritation).

Specific target organ toxicity - repeated exposure (STOT RE):

Long term exposure to respirable dust in excess of occupational exposure limit may result in coughing, shortness of breath and chronic obstructive changes in the respiratory tract. At low concentrations, no chronic effects were observed, see section 16 literature [17]. Based on the available data, the classification criteria are not fulfilled. Cement may aggravate existing skin, eye and respiratory disorders, e. g. emphysema or asthma. Frequent inhalation of large amounts of dust increases the risk of developing lung diseases.

Aspiration hazard:

Based on available data, the classification criteria are not met.

11.2 Practical experience

No further relevant information available.

11.3 General comments

See section 16 (literature and references).

Section 12 Ecological information

12.1 Toxicity

The product was not investigated. The statement is derived from the properties of the single components.

Aquatic toxicity:	
1317-65-3 Limestone (Calcium carbonate)	
LC50 (96h)	>100 mg/l (Rainbow trout - <i>oncorhynchus mykiss</i>) (OECD 203)
LC50 (48h)	>100 mg/l (Water flea - <i>daphnia magna</i>) (OECD 202)
EC50	>14 mg/l (Algae - <i>desmodesmus subspicatus</i>) (OECD 201) >1000 mg/l (Activated sewage sludge) (OECD 209)
1305-62-0 Calcium dihydroxide	
LC50 (96h seawater)	457 mg/l (Fish) 158 mg/l (Invertebrate)
LC50 (96h freshwater)	33.884 mg/l (African catfish - <i>clarias gariepinus</i>) 50.6 mg/l (Fish)
EC50 (48h)	49.1 mg/l (Invertebrate)
EC50 (72h)	184.57 mg/l (Algae)

65997-15-1 Portland cement clinker	
LC50	- mg/l (Water flea - daphnia magna) (low effect [6,8]) - mg/l (Algae - selenastrum coli) (low effect [7,8]) - mg/l (Sediments) (low effect [9])

12.2 Persistence and degradability

Is not removable from water by biological cleaning process.

12.3 Bioaccumulative potential

Does not accumulate in organisms.

12.4 Mobility in soil

Slightly soluble

Ecotoxicological effects:

Only by increasing the pH value during application of large quantities.

65997-15-1 Portland cement clinker	
NOEC (72h)	48 mg/l (Algae)
NOEC (14d)	32 mg/l (Invertebrate)
NOEC (21d)	1080 mg/kg (General plants)
NOEC (96h)	56 mg/l (Guppy - poecilia reticulata)
EC10/LC10 (NOEC)	12000 mg/kg (Soil microorganisms) 2000 mg/kg (Soil macroorganisms)

Behaviour in sewage processing plants:

No further relevant information available.

Remark:

Ecotoxicological tests with Portland cement on *Daphnia magna* (US EPA, 1994a, see Section 16 References [6]) and *Selenastrum Coli* (US EPA, 1993, see section 16 literature [7]) have shown little toxicological effect. Therefore, the LC50 and EC50 values could not be determined, see section 16 literature [8]. There were also no toxic effects on sediments found, see section 16 literature [9]. The addition of large quantities of cement in water can cause a pH increase and thus be toxic to aquatic life.

Additional ecological information:

General notes:

Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

12.5 Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

12.6 Other adverse effects

No further relevant information available.

Literature

No further relevant information available.

Section 13 Disposal considerations



Must not be disposed together with household rubbish.



Do not allow product to reach sewage system.

Bearing in mind the maximum storage time, leftover dry product should be stored in sealed containers and re-used if possible. Out of date product should be mixed with water (avoiding contact with skin), allowed to set, and disposed of according to local regulations.

European waste catalogue	
08 01 20	Aqueous suspensions containing paint or varnish other than those mentioned in 08 01 19
17 09 04	Mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03
15 01 02	Plastic packaging

16 03 03 for residual amounts of unprocessed product

17 09 04 for the settled product after it has been mixed with water

15 01 01 water and/or cleansing agents

13.2 Uncleaned packaging

Recommendation:

Disposal must be made according to official regulations. Recycle only completely emptied packaging.

Recommended cleansing agents:

Water and/or cleansing agents.

Tetramethylolacetylene diurea	<0,05%
Mixture of 5-Chloro-2-methyl-2H-isothiazolin-3-one [EC 247-500-7] and 2-Methyl-2H-isothiazol-3-one [EC 220-239-6] (3:1)	<0,0015%

Section 14 Transport information

14.1 UN-Number ADR, ADN, IMDG, IATA	VOID
14.2 UN proper shipping name ADR, ADN, IMDG, IATA	VOID
14.3 Transport hazard class(es) ADR, ADN, IMDG, IATA Class	VOID
14.4 Packing group ADR, IMDG, IATA	VOID
14.5 Environmental hazards Marine pollutant:	No
14.6 Special precautions for user	Not applicable.
14.7 Transport in bulk according to Annex II of Marpol and the IBC Code	Not applicable.
UN "Model Regulation":	Void

Section 15

Regulatory information

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

Observe the general safety regulations when handling chemicals.

Directive 2012/18/EU

Named dangerous substances - ANNEX I :

None of the ingredients are listed.

National regulations:

Biozide ingredients (98/8/EG):

Data based on recipe and information on the raw materials from the supply chain.

None of the ingredients are listed.

Water hazard class:

Water hazard class 1 (Self-assessment): slightly hazardous for water.

Other regulations, limitations and prohibitive regulations:

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC

Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006

Directive 1999/45/EC of the European Parliament and of the Council of 31 May 1999 concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations

Commission regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Regulation (EC) 1013/2006 on shipments of waste

REACH Regulation EC 1907/2006 (REACH), Annex XVII No. 47 (chromium VI - compounds).

Technical Rules for Hazardous Substances 900 - Workplace exposure limits (TRGS 900, Germany)

15.2 Chemical safety assessment

A Chemical Safety Assessment has not been carried out.

Section 16

Other information

Reasons for changes:

* Data compared to the previous version altered.

Relevant phrases:

H315 Causes skin irritation.

H317 May cause an allergic skin reaction.

H318 Causes serious eye damage.

H335 May cause respiratory irritation.

Advice for instructions:

Additional training in activities involving hazardous substances is not required.

Literature

- [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] Technische Regel für Gefahrstoffe „Arbeitsplatzgrenzwerte“, 2009, GMBI Nr.29 S.605.
- [3] MEASE 1.02.01 Exposure assessment tool for metals and inorganic substances, EBRC Consulting GmbH für Eurometaux, 2010
- [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).
- [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).
- [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.
- [9] Final report Sediment Phase Toxicity Test Results with *Corophium volutator* for Portland clinker prepared for Norcem A.S. by AnalyGen Ecotox AS, 2007.
- [10] TNO report V8801/02, An acute (4-hour) inhalation toxicity study with Portland Cement Clinker CLP/GHS 03-2010-fine in rats, August 2010.
- [11] TNO report V8815/09, Evaluation of eye irritation potential of cement clinker G in vitro using the isolated chicken eye test, April 2010.
- [12] TNO report V8815/10, Evaluation of eye irritation potential of cement clinker W in vitro using the isolated chicken eye test, April 2010.
- [13] 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.
- [14] 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
- [15] Cytotoxicity and genotoxicity of cement dusts in A549 human epithelial lung cells in vitro; Gminski et al, Abstract DGPT conference Mainz, 2008.
- [16] 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.
- [17] 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, H. Notø, H. Kjuus, M. Skogstad and K.- C. Nordby, National Institute of Occupational Health, Oslo, Norway, March 2010.
- [18] Anonymous, 2006: Tolerable upper intake levels for vitamins and minerals Scientific Committee on Food, European Food Safety Authority, ISBN: 92-9199-014-0
- [19] Anonymous, 2008: Recommendation from the Scientific Committee on Occupational Exposure Limits (SCOEL) for calcium oxide (CaO) and calcium dihydroxide (Ca(OH)₂), European Commission, DG Employment, Social Affairs and Equal Opportunities, SCOEL/SUM/137 February 2008

Department issuing MSDS:

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Abbreviations and acronyms:

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

ICAO: International Civil Aviation Organisation

MAK: Maximale Arbeitsplatz-Konzentration (maximum concentration of a chemical substance in the workplace, Austria/Germany)

PBT: persistent, bioaccumulative and toxic properties

vPvB: very persistent, bioaccumulative properties

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

DNEL: Derived No-Effect Level (REACH)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Skin Irrit. 2: Skin corrosion/irritation – Category 2

Eye Dam. 1: Serious eye damage/eye irritation – Category 1

Skin Sens. 1: Skin sensitisation – Category 1

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

Further information:

The information in this safety data sheet describes the safety requirements of our product and is based on the current state of our knowledge. They provide no assurance of product quality. The recipient must act responsibly during use and observe the existing laws, ordinances and regulations that are not mentioned on this datasheet.



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