

SAFETY DATA SHEET

Portland Cement Clinker

SDS according to Regulation (EC) No. 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Annex II-EU

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Date issued 20.09.2005

Revision date 01.06.2015

1.1. Product identifier

Product name Portland Cement Clinker

CAS no. 65997-15-1

EC no. 266-043-4

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

Use of the substance/preparation Portland cement clinker is used for the production of common cements or other hydraulic binders in industrial installations. Cement and hydraulic binders are used in the production of building materials and in construction by professional users or consumers. See section 16 for description of use.

Relevant identified uses PROC2 Use in closed, continuous process with occasional controlled exposure
PROC3 Use in closed batch process (synthesis or formulation)
PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC14 Production of preparations or articles by tableting, compression, extrusion, pelletisation
PROC26 Handling of solid inorganic substances at ambient temperature

1.3. Details of the supplier of the safety data sheet

Manufacturer

Company name NORCEM A.S
Office address Lilleakerveien 2b
Postal address Postboks 143 Lilleaker
Postcode 0216
City OSLO
Country NORWAY
Tel +4722878400
Fax +4722878402
E-mail jorunn.gundersen@norcem.no
Website <http://www.norcem.no/>
Enterprise no. 934949145

1.4. Emergency telephone number

Emergency telephone Norwegian Poisons Information:+47 22 59 13 00

SECTION 2: Hazards identification

2.1. Classification of substance or mixture

Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]	Skin Irrit. 2; H315; On basis of test data Eye Dam. 1; H318; On basis of test data Skin Sens. 1; H317; Expert judgement STOT SE3; H335; Expert judgement
Substance / mixture hazardous properties	Portland cement clinker dust may cause irritation of the respiratory system. When Portland cement clinker accidentally comes into contact with water or when clinker or clinker dust becomes damp, a strong alkaline solution is produced. Due to the high alkalinity, wet Portland cement clinker may provoke skin and eye irritation. It may also cause an allergic reaction in some individuals due to the soluble Cr(VI) content.

2.2. Label elements

Hazard Pictograms (CLP)



Signal word	Danger
Hazard statements	H318 Causes Serious eye damage. H315 Causes Skin irritation. H317 May cause an allergic skin reaction. H335 May cause respiratory irritation.
Precautionary statements	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 + P 313 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.

2.3. Other hazards

Other hazards	Portland cement clinker does not meet the criteria for PBT or vPvB in accordance with Annex XIII of REACH (Regulation (EC) No 1907/2006).
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SECTION 3: Composition/information on ingredients

3.1. Substances

Substance	Identification	Classification	Contents
Portland Cement Clinker	CAS no.: 65997-15-1 EC no.: 266-043-4	STOT SE3; H335 Skin Irrit. 2; H315 Eye Dam. 1; H318 Skin Sens. 1; H317	100 %
Description of the mixture	Portland cement clinker is a UVCB substance (Substances of Unknown or Variable composition, Complex reaction products or Biological materials) consisting of 4 main clinker phases, namely tri- and dicalcium-silicates (3CaO.SiO ₂ and 2CaO.SiO ₂), tricalcium-aluminate (3CaO.Al ₂ O ₃) and tetracalcium-aluminoferrite (4CaO.Al ₂ O ₃ .Fe ₂ O ₃), usually together with some unreacted CaO (free lime). It is made by mineralogical transformation of a precisely specified mixture of raw materials based on oxides of calcium,		

	silicon, aluminium and iron and small quantities of other elements.
Remarks, substance	Portland Cement Clinker is exempted from REACH registration.
Substance comments	List of possible constituents in Portland Cement Clinker are attached in section 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation	Move the person to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or later develops or if discomfort, coughing or other symptoms persist.
Skin contact	For dry Portland cement clinker, remove and rinse abundantly with water. For wet/damp Portland cement clinker, 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.
Eye contact	Do not rub eyes in order to avoid possible corneal damage by mechanical stress. Remove contact lenses if any. Incline head to injured eye, open the eyelids widely and flush eye(s) immediately by thoroughly rinsing with plenty of clean water for at least 20 minutes to remove all particles. Avoid flushing particles into uninjured eye. If possible, use isotonic water (0.9% NaCl). Contact a specialist of occupational medicine or an eye specialist.
Ingestion	Do not induce vomiting. If the person is conscious, wash out mouth with water and give plenty of water to drink. Get immediate medical attention or contact the anti poison centre.
Recommended personal protective equipment for first aid responders	No personal protective equipment is needed for first aid responders. First aid workers should avoid contact with wet Portland cement clinker or wet Portland cement clinker containing preparations.

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

Acute symptoms and effects	<p>Eyes: Eye contact with Portland cement clinker dust (dry or wet) may cause serious and potentially irreversible injuries.</p> <p>Skin: Portland cement clinker 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 contact between clinker dust and moist skin may cause irritation, dermatitis or burns. For more details see Reference (1).</p> <p>Inhalation: Repeated inhalation of Portland cement clinker dust over a long period of time increases the risk of developing lung diseases.</p> <p>Environment: Under normal use, Portland cement clinker is not hazardous to the environment. Spill of large amount of clinker to water/sea may give rise in pH.</p>
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4.3. Indication of any immediate medical attention and special treatment needed

Other Information	When contacting a physician, take this SDS with you.
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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	Portland cement clinker is not flammable.
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5.2. Special hazards arising from the substance or mixture

Fire and explosion hazards	Clinkers are non-combustible and non-explosive and will not facilitate or
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sustain the combustion of other materials.

5.3. Advice for firefighters

Personal protective equipment	Clinker poses no fire-related hazards. No need for special protective equipment for fire fighters.
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SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Personal precautions	Wear protective equipment as described under Section 8 and follow the advice for safe handling and use given under Section 7.
Emergency procedures	Emergency procedures are not required. However, respiratory protection is needed in situations with high dust levels.

6.2. Environmental precautions

Environmental precautionary measures	Do not wash Portland cement clinker down sewage and drainage systems or into bodies of water (e.g. streams).
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6.3. Methods and material for containment and cleaning up

Cleaning method	Collect spilled material and use it. Use dry cleanup methods such as vacuum clean-up or vacuum extraction (Industrial portable units equipped with high efficiency air filters (EPA and HEPA filters, EN 1822-1:2009) or equivalent technique), which do not cause airborne dispersion. Never use compressed air. Ensure that the workers wear appropriate personal protective equipment and prevent dust from spreading. Avoid inhalation of Portland cement clinker dust and contact with skin. Place spilled material in a container for future use.
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6.4. Reference to other sections

Other instructions	See sections 8 and 13 for more details.
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SECTION 7: Handling and storage

7.1. Precautions for safe handling

Handling	Follow the recommendations as given under Section 8. To clean up dry Portland cement clinker, see Subsection 6.3.
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Protective Safety Measures

Safety Measures To Prevent fire	Not relevant.
Preventitive 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.
Preventitive Measures to protect the environment	No particular measures.
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. Use protective gloves to avoid skin contact.

7.2. Conditions for safe storage, including any incompatibilities

Storage	Portland cement clinker should be stored under waterproof, dry (i.e. with internal condensation minimised) conditions, clean and protected from contamination. Do not use aluminium containers due to incompatibility of the materials.
Special risks and properties	Engulfment hazard: Portland cement clinker can build-up or adhere to the walls of a confined space. The clinker can release, collapse or fall unexpectedly. To prevent engulfment or suffocation, do not enter a confined space, such as a silo, bin, bulk truck, or other storage container or vessel that stores or contains Portland cement clinker without taking the proper

safety measures.

7.3. Specific end use(s)

Specific use(s) No additional information for the specific end uses (see section 1.2).

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational Exposure limit values

Substance	Identification	Value	TWA Year
Portland Cement Clinker	CAS no.: 65997-15-1 EC no.: 266-043-4	8-hour TWA: 5resp/10tot mg/m ³	

8.2. Exposure controls

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



Precautionary measures to prevent exposure

Technical measures to prevent exposure	<p>Use: Industrial manufacture/formulation of hydraulic building and construction materials.</p> <p>Exposure: Duration is not restricted (up to 480 minutes per shift, 5 shifts a week).</p> <ol style="list-style-type: none"> PROC 2 or 3. Localised controls not required. Respiratory protective equipment not required. PROC 14 or 26. Localised controls not required (use P1 mask with APF=4) or generic local exhaust ventilation with 78 % efficiency (respiratory protective equipment not required). PROC 5, 8b or 9. Either general ventilation with 17 % efficiency (use P2 mask with APF=10) or generic local exhaust ventilation with 78 % efficiency (use P1 mask with APF=4).
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Respiratory protection

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 NS-EN standard.
Recommended type of equipment	Depending of ventilation and use; see Technical measures to prevent exposure.
Reference to relevant standard	NS-EN 149, NS-EN 140, NS-EN 14387, NS-EN 1827.

Hand protection

Hand protection	Use impervious, abrasion and alkali resistant gloves (made of low soluble Cr (VI) containing material) internally lined with cotton. Protective gloves to be used must comply with the specifications of EU Directive 89/686/EEC and the
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standard NS-EN 374 The glove must be chosen in consultation with the gloves supplier, who can inform about penetration time.

Eye / face protection

Eye protection Wear approved glasses or safety goggles according to NS-EN 166 when handling dry or wet Portland cement clinker to prevent contact with eyes.

Skin protection

Skin protection (except hands) Use boots, closed long-sleeved protective clothing as well as skin care products (including barrier creams) to protect the skin from prolonged contact with wet Portland cement clinker.

Thermal hazards

Thermal hazards Not applicable.

Appropriate environmental exposure control

Environmental exposure controls Environmental exposure control for the emission of clinker particles into air has to be in accordance with the available technology and regulations for the emission of general dust particles.

Environmental exposure control is relevant for the aquatic environment as emissions of clinker dust in the different life-cycle stages (production and use) mainly apply to ground and waste water. The aquatic effect and risk assessment cover the effect on organisms/ecosystems due to possible pH changes related to hydroxide discharges. The toxicity of other dissolved inorganic ions is expected to be negligible compared to the potential pH effect.

Any effects that might occur during production and use would be expected to take place on a local scale. The pH of effluent and surface water should not exceed 9. Otherwise it could have an impact on municipal sewage treatment plants (STPs) and industrial waste water treatment plants (WWTPs). For that assessment of the exposure, a stepwise approach is recommended:

Tier 1: Retrieve information on effluent pH and the contribution of the clinker dust on the resulting pH. Should the pH be above 9 and be predominantly attributable to clinker dust, then further actions are required to demonstrate safe use.

Tier 2: Retrieve information on receiving water pH after the discharge point. The pH of the receiving water shall not exceed the value of 9.

Tier 3: Measure the pH in the receiving water after the discharge point. If pH is below 9, safe use is reasonably demonstrated. If pH is found to be above 9, risk management measures have to be implemented: the effluent has to undergo neutralisation, thus ensuring safe use of clinker during production or use phase.

No special emission control measures are necessary for the exposure to the terrestrial environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	granular
Colour	grey or white
Odour	Odourless
Comments, Odour limit	no odour threshold, odourless
pH (aqueous solution)	Value: 11-13,5
Comments, pH (aqueous solution)	T = 20°C in water, water-solid ratio 1:2
Melting point/melting range	Value: > 1250 °C
Comments, Boiling point / boiling	Not applicable as under normal atmospheric conditions.

range	
Comments, Flash point	Not applicable as is not a liquid
Comments, Evaporation rate	Not applicable as is not a liquid.
Flammability (solid, gas)): Not applicable as is a solid which is non combustible
Lower explosion limit with unit of measurement	Not applicable as is not a flammable gas.
Upper explosion limit with units of measurement	Not applicable as is not a flammable gas.
Comments, Explosion limit	Not applicable. Not explosive or pyrotechnic. Not in itself capable of producing gas by chemical reaction at temperature and pressure and at a speed as to cause damage to the surroundings. Not capable of a self-sustaining exothermic chemical reaction.
Comments, Vapour pressure	Not applicable as melting point > 1250 °C
Comments, Vapour density	Not applicable as melting point > 1250 °C
Specific gravity	Value: 2,75-3,20 g/cm ³
Bulk density	Value: 0,9-1,5 g/cm ³
Solubility in water	0,1 - 1,5 g/l (20°C)
Comments, Partition coefficient: n-octanol / water	Not applicable as is inorganic substance
Comments, Spontaneous combustability	Not applicable (no pyrophoricity – no organo-metallic, organo-metalloid or organo-phosphine bindings or of their derivatives, and no other pyrophoric constituent in the composition)
Comments, Decomposition temperature	Not applicable as no organic peroxide present
Comments, Viscosity	Not applicable as not a liquid

9.2. Other information

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	When mixed with water, Portland cement clinker will harden into a stable mass that is not reactive in normal environments.
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10.2. Chemical stability

Stability	<p>Portland cement clinker is stable as long as it is properly stored (see Section 7). It should be kept dry. Contact with incompatible materials should be avoided.</p> <p>Wet clinker is alkaline and incompatible with acids, with ammonium salts, with aluminium or other non-noble metals. Clinker dissolves in hydrofluoric acid to produce corrosive silicon tetrafluoride gas. Clinker reacts with water to form silicates and calcium hydroxide. Silicates in clinker react with powerful oxidizers such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride.</p>
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10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	Not relevant.
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10.4. Conditions to avoid

Conditions to avoid	Humid conditions during storage may cause lump formation and loss of product quality.
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10.5. Incompatible materials

Materials to avoid	Acids, ammonium salts, aluminium or other non-noble metals.
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10.6. Hazardous decomposition products

Hazardous decomposition products	Portland cement clinker will not decompose into any hazardous products.
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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Other information regarding health hazards

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

Acute toxicity, Mixture estimate

Oral No indication of oral toxicity from studies with cement kiln dust. Cement kiln dust contains Portland cement clinker in varying amounts. Based on available data, the classification criteria are not met. Reference: Literature survey.

Dermal Limit test, rabbit, 24 hours contact, 2,000 mg/kg body weight – no lethality. Cement used in the study is Portland cement with over 90% of Portland cement clinker. Based on available data, the classification criteria are not met. See ref. 2.

Inhalation of dust and mist No acute toxicity by inhalation observed. Based on available data, the classification criteria are not met. See ref. 8.

Potential acute effects

Inhalation Portland Cement clinker dust may irritate the throat and respiratory tract. Coughing, sneezing, and shortness of breath may occur following exposures in excess of occupational exposure limits.

Skin contact Skin corrosion/irritation-Cat 2:
Portland cement clinker in contact with wet skin may cause thickening, cracking or fissuring of the skin. Prolonged contact in combination with abrasion may cause severe burns. Cement used in the study is Portland cement with over 90% Portland cement clinker. Reference: Human experience and ref. 2.

Eye contact Serious eye damage/irritation- Cat 1:
Portland cement clinker caused a mixed picture of corneal effects and the calculated irritation index was 128.
Direct contact with Portland cement clinker may cause corneal damage by mechanical stress, immediate or delayed irritation or inflammation. Direct contact with larger amounts of dry Portland cement clinker dust or splashes of wet clinker may cause effects ranging from moderate eye irritation (e.g. conjunctivitis or blepharitis) to chemical burns and blindness. See ref 9 and 10.

Ingestion Irritation of the digestive system may occur if you swallow large amounts of clinker.

Aspiration hazard Not applicable

Delayed effects / repeated exposure

Sensitisation Skin sensitisation Cat 1:
Some individuals may develop eczema upon exposure to wet clinker 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. See ref. 3 and 11.

Respiratory sensitisation:
There is no indication of sensitisation of the respiratory system. Based on available data, the classification criteria are not met. See ref. 1.

STOT-single exposure Cat. 3. Portland Cement clinker 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. See ref. 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. See ref. 15.
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Carcinogenic, Mutagenic or Reprotoxic

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.). Portland cement contains over 90% Portland cement clinker Based on available data, the classification criteria are not met. See ref. 1 and 14.
Mutagenicity	No indication. Based on available data, the classification criteria are not met. See ref. 12 and 13.
Reproductive toxicity	Based on available data, the classification criteria are not met. Reference: No evidence from human experience.

Symptoms of Exposure

Other Information	Portland cement clinker 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.
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SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicity	The product is not hazardous to the environment. Ecotoxicological tests with Portland cement - whose composition is very closely related to that of clinker - on <i>Daphnia magna</i> [Reference (4)] and <i>Selenastrum coli</i> [Reference (5)] have shown little toxicological impact. Therefore LC50 and EC50 values could not be determined [Reference (6)]. There is no indication of sediment phase toxicity [Reference (7)]. The addition of large amounts of Portland cement clinker to water may, however, cause a rise in pH and may, therefore, be toxic to aquatic life under certain circumstances.
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12.2. Persistence and degradability

Persistence and degradability	Not relevant as Portland cement clinker is an inorganic material. After hydration, Portland cement clinker lumps present no toxicity risks.
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12.3. Bioaccumulative potential

Bioaccumulative potential	Not relevant as Portland cement clinker is an inorganic material. After hydration, Portland cement clinker lumps present no toxicity risks.
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12.4. Mobility in soil

Mobility	Not relevant as Portland cement clinker is an inorganic material. After hydration, Portland cement clinker lumps present no toxicity risks.
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12.5. Results of PBT and vPvB assessment

PBT assessment results	Not relevant as Portland cement clinker is an inorganic material. After hydration, Portland cement clinker lumps present no toxicity risks.
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12.6. Other adverse effects

Other adverse effects / Remarks	Not applicable.
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SECTION 13: Disposal considerations

13.1. Waste treatment methods

Specify the appropriate methods of disposal	Cement clinker may always be reused. To be disposed of according to FOR 2004-06-1 nr 930: Norwegian Regulations concerning recycling and treatment of waste. The given EWCcode(s) are guidelines only. The end user has to chose the correct code(s) based on the actual use of the product.
EWC waste code	EWC: 1013 wastes from manufacture of cement, lime and plaster and articles and products made from them
Other Information	Do not dispose of into sewage systems or surface waters.

SECTION 14: Transport information

14.1. UN number

Comments Not relevant.

14.2. UN proper shipping name

Comments Not relevant.

14.3. Transport hazard class(es)

Comments Not relevant.

14.4. Packing group

Comments Not relevant.

14.5. Environmental hazards

Comments Not relevant.

14.6. Special precautions for user

Special safety precautions for user Not relevant.

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

Additional information. Portland cement clinker is not covered by the international regulation on the transport of dangerous goods (IMDG, IATA, ADR/RID); no classification is required.
No special precautions are needed apart from those mentioned under Section 8.

SECTION 15: Regulatory information

EC no. 266-043-4

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

Other Label Information	Cement clinker is exempt from registration (Art 2.7 (b) and Annex V.10 of REACH). Reference number C&L notification: 02-2119682167-31-0000.
Legislation and regulations	FOR 2012-06-16 nr 622: Norwegian Regulations for classification and labelling of substances and mixtures (CLP). FOR 2008-05-30 nr 516: Norwegian REACH regulation. REACH (Regulation (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006) FOR 2004-06-01 nr 930: Norwegian Regulations concerning recycling and treatment of waste, as amended. International Transport Regulation: ADR/RID, IMDG, IATA. FOR 2011-12-06: Norwegian regulations concerning performing work. FOR 2011-12-06 nr. 1358 Norwegian Occupational Exposure Limits Annex VI to Regulation (EC) No 1272/2008 includes lists of harmonised classification and labelling www/ecb.jrc.ec.europa.eu/classification-labelling/clp/ . COMMISSION REGULATION (EU) No 453/2010 of 20 May 2010, amending Regulation (EC) No 1907/2006 REACH.
Comments	The so-called "Good practice guides" which contain advice on safe handling

practices can be found from: <http://www.nepsi.eu/good-practice-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.

15.2. Chemical safety assessment

SECTION 16: Other information

Supplier's notes	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.
Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]	Skin Irrit. 2; H315; On basis of test data Skin Sens. 1; H317; Expert opinion Eye Dam. 1; H318; On basis of test data STOT SE3; H335; Expert opinion
List of relevant H-phrases (Section 2 and 3).	H318 Causes Serious eye damage. H315 Causes skin irritation. H335 May cause respiratory irritation. H317 May cause an allergic skin reaction.
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.
Recommended restrictions on use	PROC2 Use in closed, continuous process with occasional controlled exposure PROC3 Use in closed batch process (synthesis or formulation) PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC14 Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC26 Handling of solid inorganic substances at ambient temperature
Abbreviations and acronyms used	ADR/RID European Agreements on the transport of Dangerous goods by Road/Railway 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 EC50 Half maximal effective concentration ECHA European Chemicals Agency EINECS European Inventory of Existing Commercial chemical Substances EPA Type of high efficiency air filter FF P Filtering facepiece against particles (disposable) FM P Filtering mask against particles with filter cartridge GefStoffV Gefahrstoffverordnung HEPA Type of high efficiency air filter H&S Health and Safety IATA International Air Transport Association IMDG International agreement on the Maritime transport of Dangerous Goods LC50 Median lethal dose

	<p>MS Member State OEL Occupational exposure limit OELV Occupational exposure limit value PBT Persistent, bio-accumulative and toxic PNEC Predicted no-effect concentration PROC Process category REACH Registration, Evaluation and Authorisation of Chemicals SCOEL Scientific Committee on Occupational Exposure Limit Values SDS Safety Data Sheet STOT Specific target organ toxicity TLV-TWA Threshold Limit Value-Time-Weighted Average TRGS Technische Regeln für Gefahrstoffe UVCB Substances of Unknown or Variable composition, Complex reaction products or Biological materials 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</p>
<p>Important data sources used to construct the safety data sheet</p>	<p>The Safety Data Sheet has been prepared using a template and information from the European cement industry's trade association Cembureau (www.cembureau.eu), 15.12.2014.</p> <p>(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.</p> <p>(2) Observations on the effects of skin irritation caused by cement, Kietzman et al, <i>Dermatosen</i>, 47, 5, 184-189 (1999).</p> <p>(3) 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.</p> <p>(4) 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).</p> <p>(5) 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).</p> <p>(6) 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.</p> <p>(7) Final report Sediment Phase Toxicity Test Results with <i>Corophium volutator</i> for Portland clinker prepared for Norcem A.S. by AnalyCen Ecotox AS, 2007.</p> <p>(8) TNO report V8801/02, An acute (4-hour) inhalation toxicity study with Portland Cement Clinker CLP/GHS 03-2010-fine in rats, August 2010.</p> <p>(9) TNO report V8815/09, Evaluation of eye irritation potential of cement</p>

clinker G in vitro using the isolated chicken eye test, April 2010.

(10) TNO report V8815/10, Evaluation of eye irritation potential of cement clinker W in vitro using the isolated chicken eye test, April 2010.

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Information which has been added, deleted or revised

Safety Data Sheet has been revised to meet the requirements acc. Commission Regulation (EC) No 453/2010.

Version

1

Responsible for safety data sheet

NORCEM A.S

Exposure scenario

Composition information.pdf