

Safety Data Sheet

under Regulation (EC) № 1906/2006 (REACH), as amended by Regulation 453/2010

PORTLAND CEMENT CLINKER

Date of issue: 01.06.2015

Issue:3/2015

1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY			
1.1 Product identifier			
Portland cement clinker* EINECS: 266-043-4* CAS: 65997-15-1 *Entry is referred to as Cement, portland, chemicals but actually describes Portland cement clinker Reference number C&L notification: 02-2119682167-31-0000 Cement clinker is exempt from registration (Art 2.7 (b) and Annex V.10 of REACH), hence no registration number is given.			
1.2 Relevant identified uses of the substance or mixture and uses advised against			
Uses: 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.			
PROC	Identified Uses - Use Description	Manufacture/ Formulation of building and construction materials	Professional/ Industrial use of building and construction materials
2	Use in closed, continuous process with occasional controlled exposure	X	X
3	Use in closed batch process	X	X
5	Mixing or blending in batch process for formulation of preparations and articles	X	X
8b	Transfer of substance or preparation from/to vessels/large containers a dedicated facilities	X	X
9	Transfer of substance or preparation into small containers	X	X
14	Production of preparations or articles by tableting, compression extrusion, pelletisation	X	X
26	Handling of solid inorganic substances at ambient temperature	X	X
Uses advised against:		None	
1.3 Details of the supplier of the safety data sheet			
Manufacturer/Importer/Supplier:		Company name: Holcim (Bulgaria) AD full address: 3040 Beli Izvor, Vratsa	



Safety Data Sheet

under Regulation (EC) № 1906/2006 (REACH), as amended by Regulation 453/2010

PORTLAND CEMENT CLINKER

Date of issue: 01.06.2015

Issue:3/2015

	Tel.: + 359 92 661341 Факс: + 359 92 661371 URL website: www.holcim.bg	
Persons responsible for the Safety Data Sheet	Health & Safety: georgi.iliev@lafargeholcim.com Environment: plamen.valchev@lafargeholcim.com Quality: tsvetana.kostova@lafargeholcim.com	
1.4 Emergency telephone number		
Emergency phone number:	National Toxicology Information Center, Hospital for Active Treatment and Emergency Medicine "N.I. Pirogov" Emergency telephone number: +359 2 9154 233 Working hours: 24 h / 7 days Emergency telephone number / fax: +359 2 9154 409 Working hours: 8-16 h / 7 days E-mail: poison_centre@mail.orbitel.bg http://www.pirogov.bg Information, which provides: Seek First Aid or the nearest center of Toxicology Is it available outside working hours? YES	
Emergency phone number:	112 – in case of emergency with the product	
2. HAZARDS IDENTIFICATION		
2.1 Classification of the substance or the mixture		
2.1.1. Classification in accordance with Regulation 1272/2008 (CLP)		
Hazard class	Hazard category	Hazard statements
Skin irritation	2	H315: Causes skin irritation
Serious eye damage/eye irritation	1	H318: Causes serious eye
Skin sensitisation	1B	H317; May cause an allergic skin
Specific target organ toxicity single exposure respiratory tract irritation	3	H335: May cause respiratory irritation
2.2 Label elements		
2.2.1. Labelling in accordance with Regulation 1272/2008 (CLP)		
Hazard pictogram(s): GHS05 – Corrosive GHS07 – Attention Signal word Danger	 	

Safety Data Sheet

under Regulation (EC) № 1906/2006 (REACH), as amended by Regulation 453/2010

PORTLAND CEMENT CLINKER

Date of issue: 01.06.2015

Issue:3/2015

Hazard statement(s):	H318 H315 H317 H335	Causes serious eye damage Causes skin irritation May cause an allergic skin reaction May cause respiratory irritation
Precautionary statement(s):	P280 P305+P351+P338+P310 P302+P352+P333+P313 P261+P304+P340+P312	Wear protective gloves/protective clothing/eye protection/face protection 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 Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention 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

PBT/vPvB criteria:	Portland cement clinker does not meet the criteria for PBT or vPvB in accordance with Annex XIII of REACH (Regulation (EC) No 1907/2006). Portland cement clinker dust may cause allergic reaction in some individuals due to the water soluble Cr (VI) content.
--------------------	---

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances

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 ($3\text{CaO}\cdot\text{SiO}_2$ and $2\text{CaO}\cdot\text{SiO}_2$), tricalcium-aluminate ($3\text{CaO}\cdot\text{Al}_2\text{O}_3$) and tetracalcium-aluminoferrite ($4\text{CaO}\cdot\text{Al}_2\text{O}_3\cdot\text{Fe}_2\text{O}_3$), 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.

Composition information – main constituents

IUPAC name	EC number	CAS number	Mol. Formula	Typical conc. (%w/w)	Conc. Range (%w/w)
Tricalcium silicate	235-336-9	12168-85-3	$3\text{CaO}\cdot\text{SiO}_2$	63	0 – 85
Dicalcium silicate	233-107-8	10034-77-2	$2\text{CaO}\cdot\text{SiO}_2$	15	0 - 85
Tetracalcium aluminoferrite	235-094-4	12068-35-8	$4\text{CaO}\cdot\text{Al}_2\text{O}_3\cdot\text{Fe}_2\text{O}_3$	10	0 – 30

Safety Data Sheet

under Regulation (EC) № 1906/2006 (REACH), as amended by Regulation 453/2010

PORTLAND CEMENT CLINKER

Date of issue: 01.06.2015

Issue:3/2015

Tricalcium aluminate	234-932-6	12042-78-3	3CaO.Al ₂ O ₃	10	0 – 20
Calcium oxide (free lime)	215-138-9	1305-78-8	CaO	1	0 - 10

4. FIRST-AID MEASURES

4.1 Description of first aid measures - 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.

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.
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.
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.
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.

4.2 Most important symptoms and effects

Acute 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. <i>For more details see Reference (1).</i></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.</p>
---------------	---

Safety Data Sheet

under Regulation (EC) № 1906/2006 (REACH), as amended by Regulation 453/2010

PORTLAND CEMENT CLINKER

Date of issue: 01.06.2015

Issue:3/2015

<p>4.3 Indication of any immediate medical attention and special treatment needed</p> <p>When contacting a physician, take this SDS with you.</p>	
<p>5. FIRE-FIGHTING MEASURES</p>	
<p>5.1 Extinguishing media - Portland cement clinker is not flammable.</p>	
Suitable:	-
Not suitable:	-
<p>5.2 Special hazards arising from the substance or mixture</p> <p>Clinker is non-combustible and non-explosive and will not facilitate or sustain the combustion of other materials.</p>	
<p>5.3 Advice for firefighters - Clinker poses no fire-related hazards. No need for special protective equipment for fire fighters.</p> <p><i>Special protection equipment</i> – not necessary</p> <p><i>Precaution measures</i> – not necessary</p>	
<p>6. ACCIDENTAL RELEASE MEASURES</p>	
<p>6.1 Personal precautions, protective equipment and emergency procedures</p> <p><i>For non-emergency personnel</i> - Wear protective equipment as described under Section 8 and follow the advice for safe handling and use given under Section 7.</p> <p><i>For emergency responders</i> - Emergency procedures are not required. However, respiratory protection is needed in situations with high dust levels.</p>	
<p>6.2 Environmental precautions</p> <p>Do not wash Portland cement clinker down sewage and drainage systems or into bodies of water (e.g. streams).</p>	
<p>6.3 Methods and material for containment and cleaning up</p> <p>Collect spilled material and use it.</p> <p>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.</p> <p>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.</p>	
<p>6.4 Reference to other sections</p> <p>See section 8 for personal protective equipment and section 13 for waste disposal.</p>	
<p>7. HANDLING AND STORAGE</p>	
<p>7.1 Precautions for safe handling</p>	
Technical measures/ Precautions:	Follow the recommendations as given under Section 8. To clean up dry Portland cement clinker, see Subsection 6.3.

Safety Data Sheet

under Regulation (EC) № 1906/2006 (REACH), as amended by Regulation 453/2010

PORTLAND CEMENT CLINKER

Date of issue: 01.06.2015

Issue:3/2015

	<p>Measures to prevent fire Not applicable.</p> <p>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.</p> <p>For more information, refer to the practice guidelines 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. These safe handling practices It can be found via the following link: http://www.nepsi.eu/agreement-good-practice-guide/good-practice-guide.aspx.</p> <p>Measure to protect the environment No particular measures.</p>
<p>General occupation hygiene:</p>	<p>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.</p>
<p>7.2 Conditions for safe storage, including any incompatibilities</p>	
<p>Technical measures/ Storage conditions:</p>	<p>Portland cement clinker should be stored under waterproof, dry (i.e. with internal condensation minimised) conditions, clean and protected from contamination. 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.</p>
<p>Incompatible products:</p>	<p>Do not use aluminium containers due to incompatibility of the materials.</p>
<p>7.3 Specific end use(s)</p>	
<p>Clinker is used for the production of common cements or other hydraulic binders. In general such final products have to be low in water soluble Cr(VI). Typically, the final products contain a chromate reducing agent.</p>	
<p>8. EXPOSURE CONTROLS / PERSONAL PROTECTION</p>	
<p>8.1 Control parameters Legal base: Regulation 13 on employees protection against risks related to chemical agents exposure</p>	

Safety Data Sheet

under Regulation (EC) № 1906/2006 (REACH), as amended by Regulation 453/2010

PORTLAND CEMENT CLINKER

Date of issue: 01.06.2015

Issue:3/2015

Regulated occupational exposure limit values:	TLV-TWA: not established/required for this substance TLV-TWA (for total dust): 10 mg/m ³ (inhalable particles)
---	--

8.2 Exposure controls

8.2.1. Appropriate engineering controls

Measures to reduce generation of dust and to avoid dust propagating in the environment such as dedusting, exhaust ventilation and dry clean-up methods which do not cause airborne dispersion.

Use	PROC*	Expo- sure	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 %

* PROC's are identified uses and defined in section 1.2.

For each individual PROC, users can choose from either option A) or B) in the table above, according to what is best suited to their specific situation. If one option is chosen, then the same option has to be chosen in the table from section "8.2.2 Individual protection measures such as personal protection equipment" - Specification of respiratory protective equipment

8.2.2. Individual protection measures, such as personal protective equipment

Respiratory protection

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

Exposure Scenario	PROC*	Expo- sure	Specification of respiratory protective equipment (RPE)	RPE efficiency -assigned protection factor (APF)
Industrial manufacture/formulation of hydraulic building and construction materials	2, 3	Duration is not restricted (up to 480 minutes per shift, 5 shifts a week)	not required	-
	14, 26		A) FFP1 or B) not required	APF = 4 -
	5, 8b, 9		A) FFP2 or	APF = 10



Safety Data Sheet

under Regulation (EC) № 1906/2006 (REACH), as amended by Regulation 453/2010

PORTLAND CEMENT CLINKER

Date of issue: 01.06.2015

Issue:3/2015

			B) FFP1	APF = 4
<p>* PROC's are identified uses and defined in section 1.2. For each individual PROC, users must choose option A) or B) in the table above, according to what was chosen in section "8.2.1 Appropriate engineering controls" – localised controls.</p>				
Hygiene measures:		<p>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. Immediately after working with Portland cement clinker or Portland cement clinker-containing materials, workers should wash or shower or use skin moisturisers. Remove contaminated clothing, footwear, watches, etc. and clean thoroughly before re-using them.</p>		
Eye /face protection 		<p>Wear approved glasses or safety goggles according to EN 166 when handling dry or wet Portland cement clinker to prevent contact with eyes.</p>		
Skin protection 		<p>Use impervious, abrasion and alkali resistant gloves (made of low soluble Cr (VI) containing material) internally lined with cotton, 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.</p>		
Thermal hazards		Not applicable.		
<p>Environmental exposure controls Air: 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. Water: Do not wash clinker into sewage systems or into bodies of water, to avoid high pH. Above pH 9 negative ecotoxicological impacts are possible. Soil and terrestrial environment: No special emission control measures are necessary for the exposure to the terrestrial environment.</p>				
<p>9. PHYSICAL AND CHEMICAL PROPERTIES</p>				
<p>9.1 Information on basic physical and chemical properties</p>				
Appearance:		Portland cement clinker is a grey or white, granular inorganic solid material		
Odour:		Odourless Odour threshold: no odour threshold, odourless		
pH: (T = 20°C in water, water-solid ratio 1:2)		11-13.5		
Melting point:		> 1250 °C		
Initial boiling point and boiling range:		Not applicable as under normal atmospheric conditions, melting point > 1250°C		

Safety Data Sheet

under Regulation (EC) № 1906/2006 (REACH), as amended by Regulation 453/2010

PORTLAND CEMENT CLINKER

Date of issue: 01.06.2015

Issue:3/2015

Flash-point:	Not applicable as is not a liquid
Evaporation rate:	Not applicable as is not a liquid
Flammability (solid, gas):	Not applicable as is a solid which is non combustible and does not cause or contribute to fire through friction
Upper/lower flammability or explosive limits:	Not applicable as is not a flammable gas
Vapour pressure:	Not applicable as melting point > 1250 °C
Vapour density:	Not applicable as melting point > 1250 °C
Relative density:	2.75-3.20; Apparent density -: 0.9-1.5 g/cm ³
Solubility(ies) in water (T = 20 °C):	slight (0.1-1.5 g/l)
Partition coefficient: n-octanol/water:	Not applicable as is inorganic substance
Auto-ignition temperature:	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)
Decomposition temperature:	Not applicable as no organic peroxide present
Viscosity:	Not applicable as not a liquid
Explosive properties:	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.
Oxidising properties:	Not applicable as does not cause or contribute to the combustion of other materials.

9.2 Other information

Not applicable.

10. STABILITY AND REACTIVITY

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

10.2 Chemical stability - 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.

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.

10.3 Possibility of hazardous reactions - Portland cement clinkers do not cause hazardous reactions.

10.4 Conditions to avoid - Humid conditions during storage may cause lump formation and loss of product quality.

10.5 Incompatible materials - Acids, ammonium salts, aluminium or other non-noble metals.

10.6 Hazardous decomposition products - Portland cement clinker will not decompose into any hazardous products.

Safety Data Sheet

under Regulation (EC) № 1906/2006 (REACH), as amended by Regulation 453/2010

PORTLAND CEMENT CLINKER

Date of issue: 01.06.2015

Issue:3/2015

11. TOXICOLOGICAL INFORMATION			
11.1 Information on toxicological effects			
Hazard class	Cat	Effect	Reference
Acute toxicity - dermal	-	Limit test, rabbit, 24 hours contact, 2,000 mg/kg body weight – no lethality. 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.	(2)
Acute toxicity- inhalation	-	No acute toxicity by inhalation observed. Based on available data, the classification criteria are not met	(8)
Acute toxicity - 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	Literature survey
Skin corrosion/ irritation	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.	(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. 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.	(9), (10)
Skin sensitisation	1B	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.	(3), (11), (16)
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. 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	(1) (14)

Safety Data Sheet

under Regulation (EC) № 1906/2006 (REACH), as amended by Regulation 453/2010

PORTLAND CEMENT CLINKER

Date of issue: 01.06.2015

Issue:3/2015

		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.	
Reproductive toxicity;	-	Based on available data, the classification criteria are not met.	No evidence from human experience
STOT single exposure	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.	(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 Portland cement clinker is not used as an aerosol.	

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

Medical conditions aggravated by exposure

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.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

The product is not hazardous to the environment. Ecotoxicological tests with Portland cement - whose composition is very closely related to that of clinker - on *Daphnia magna* [Reference (4)] and *Selenastrum coli* [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.

12.2 Persistence and degradability

Not relevant as Portland cement clinker is an inorganic material. After hydration, Portland cement clinker lumps present no toxicity risks.

12.3 Bioaccumulative potential

Not relevant as Portland cement clinker is an inorganic material. After hydration, Portland cement clinker lumps present no toxicity risks.

12.4 Mobility in soil

Not relevant as Portland cement clinker is an inorganic material. After hydration, Portland cement clinker lumps

Safety Data Sheet

under Regulation (EC) № 1906/2006 (REACH), as amended by Regulation 453/2010

PORTLAND CEMENT CLINKER

Date of issue: 01.06.2015

Issue:3/2015

present no toxicity risks.	
12.5 Results of PBT and vPvB assessment	
Not relevant as Portland cement clinker is an inorganic material. After hydration, Portland cement clinker lumps present no toxicity risks.	
12.6 Other adverse effects - Not relevant.	
13. DISPOSAL CONSIDERATIONS	
13.1 Waste treatment methods	Cement clinker may always be reused. Waste treatment methods do not apply. Do not dispose of into sewage systems or surface waters.
14. Transport 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.	
14.1. UN number	Not relevant.
14.2. UN proper shipping name	Not relevant.
14.3. Transport hazard class(es)	Not relevant.
14.4. Packaging group	Not relevant.
14.5. Environmental hazards	Not relevant.
14.6. Special precautions for user	Not relevant.
14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not relevant.
15. REGULATORY INFORMATION	
15.1 Safety, health and environmental regulation/legislation specific for the substance or mixture:	Cement clinker is exempt from registration (Art 2.7 (b) and Annex V.10 of REACH). Regulation 13 on employees protection against risks related to chemical agents exposure
15.2 Chemical safety assessment:	No chemical safety assessment has been carried out.
16. OTHER INFORMATION	
Carried out change in the document	Current Safety Data Sheet is updated according to Annex I of Reglment (EO) 453 / 20.05.2010 (Annex II of REACH)
Main sources of information for Safety Data Sheet	Regulation 13 on employees protection against risks related to chemical agents exposure; - Company instructions, procedures, protocols; - IUCLID Dataset - Natural gas condensates - European Commission - European Chemical Bureau
Legal base:	- Law on protection against negative impact from chemical substances and mixtures; - Regulation on classification, packaging and labeling of chemical substances and mixtures; - Reglment (EO) 1907/2006 (REACH);

Safety Data Sheet

under Regulation (EC) № 1906/2006 (REACH), as amended by Regulation 453/2010

PORTLAND CEMENT CLINKER

Date of issue: 01.06.2015

Issue:3/2015

	<ul style="list-style-type: none"> - Reglment (EO) №1272/2008 (CLP); - Reglment (EO) 453/20.05.2010 on requirements for SDS
Abbreviations and acronyms	<p>ADR/RID European Agreements on the transport of Dangerous goods by Road/Railway</p> <p>APF Assigned protection factor</p> <p>CAS Chemical Abstracts Service</p> <p>CLP Classification, labelling and packaging (Regulation (EC) No 1272/2008)</p> <p>COPD Chronic Obstructive Pulmonary Disease</p> <p>DNEL Derived no-effect level</p> <p>EC50 Half maximal effective concentration</p> <p>ECHA European Chemicals Agency</p> <p>EINECS European INventory of Existing Commercial chemical Substances</p> <p>EPA Type of high efficiency air filter</p> <p>FF P Filtering facepiece against particles (disposable)</p> <p>FM P Filtering mask against particles with filter cartridge</p> <p>GefStoffV Gefahrstoffverordnung</p> <p>HEPA Type of high efficiency air filter</p> <p>H&S Health and Safety</p> <p>IATA International Air Transport Association</p> <p>IMDG International agreement on the Maritime transport of Dangerous Goods</p> <p>LC50 Median lethal dose</p> <p>MS Member State</p> <p>OEL Occupational exposure limit</p> <p>OELV Occupational exposure limit value</p> <p>PBT Persistent, bio-accumulative and toxic</p> <p>PNEC Predicted no-effect concentration</p> <p>PROC Process category</p> <p>REACH Registration, Evaluation and Authorisation of Chemicals</p> <p>SCOEL Scientific Committee on Occupational Exposure Limit Values</p> <p>SDS Safety Data Sheet</p> <p>STOT Specific target organ toxicity</p> <p>TLV-TWA Threshold Limit Value-Time-Weighted Average</p> <p>TRGS Technische Regeln für Gefahrstoffe</p> <p>UVCB Substances of Unknown or Variable composition, Complex reaction products or Biological materials</p> <p>VLE-MP Exposure limit value-weighted average in mg by cubic meter of air</p> <p>vPvB Very persistent, very bio-accumulative</p> <p>w/w Weight by weight</p>
Key literature references and sources of data	<ol style="list-style-type: none"> (1) <i>Portland Cement Dust - Hazard assessment document EH75/7</i>, UK Health and Safety Executive, 2006. Available from: (2) <i>Observations on the effects of skin irritation caused by cement</i>, Kietzman et al, <i>Dermatosen</i>, 47, 5, 184-189 (1999). (3) <i>Epidemiological assessment of the occurrence of allergic dermatitis in workers in the construction industry related to the content of Cr (VI) in cement</i>, NIOH, Page 11, 2003. (4) U.S. EPA, <i>Short-term Methods for Estimating the Chronic Toxicity</i>

Safety Data Sheet

under Regulation (EC) № 1906/2006 (REACH), as amended by Regulation 453/2010

PORTLAND CEMENT CLINKER

Date of issue: 01.06.2015

Issue:3/2015

	<p><i>of Effluents and Receiving Waters to Freshwater Organisms</i>, 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, <i>Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms</i>, 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) <i>Environmental Impact of Construction and Repair Materials on Surface and Ground Waters. Summary of Methodology, Laboratory Results, and Model Development.</i> NCHRP report 448, National Academy Press, Washington, D.C., 2001.</p> <p>(7) <i>Final report Sediment Phase Toxicity Test Results with Corophium volutator for Portland clinker</i> prepared for Norcem A.S. by AnalyCen Ecotox AS, 2007. TNO report V8801/02, <i>An acute (4-hour) inhalation toxicity study with Portland Cement Clinker CLP/GHS 03-2010-fine in rats</i>, August 2010.</p> <p>(9) TNO report V8815/09, <i>Evaluation of eye irritation potential of cement clinker G in vitro using the isolated chicken eye test</i>, April 2010. TNO report V8815/10, <i>Evaluation of eye irritation potential of cement clinker W in vitro using the isolated chicken eye test</i>, April 2010.</p> <p>(11) <i>European Commission's Scientific Committee on Toxicology, Ecotoxicology and the Environment (SCTEE) opinion of the risks to health from Cr (VI) in cement</i> (European Commission, 2002).</p> <p>(12) <i>Investigation of the cytotoxic and proinflammatory effects of cement dusts in rat alveolar macrophages</i>, Van Berlo et al, Chem. Res. Toxicol., 2009 Sept; 22(9):1548-58</p> <p>(13) <i>Cytotoxicity and genotoxicity of cement dusts in A549 human epithelial lung cells in vitro</i>; Gminski et al, Abstract DGPT conference Mainz, 2008.</p> <p>(14) <i>Comments on a recommendation from the American Conference of governmental industrial Hygienists to change the threshold limit value for Portland cement</i>, Patrick A. Hessel and John F. Gamble, EpiLung Consulting, June 2008.</p> <p>(15) <i>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</i>, Hilde Notø, Helge Kjuus, Marit Skogstad and Karl-Christian Nordby, National Institute of Occupational Health, Oslo, Norway, March 2010.</p> <p>(16) <i>Occurrence of allergic contact dermatitis caused by chromium in cement. A review of epidemiological investigations</i>, Kåre Lenvik, Helge Kjuus, NIOH, Oslo, December 2011.</p>
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.

Safety Data Sheet

under Regulation (EC) № 1906/2006 (REACH), as amended by Regulation 453/2010

PORTLAND CEMENT CLINKER

Date of issue: 01.06.2015

Issue:3/2015

Classification and procedure used for classification of substances under Regulation (EC) № 1272/2008 [CLP]	<u>Classification according to Regulation (EC) № 1272/2008</u>	<u>Classification procedure</u>
	<u>[CLP]</u> Skin irritation – 2 – H 315 Eye damage – 1 – H 318 Skin sensitisation – 1B – H 317 STOT SE - 3 – H 335	On basis of test data On basis of test data Human experience Human experience
<p>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.</p> <p style="text-align: center;">= END =</p>		