# **Environmental Product Declaration**

In accordance with EN 15804 for:

# CEM I 52.5 N CEM I 42.5 R



# From **SCHWENK Latvija SIA**



Publication date: 2019-11-06

Valid until: 2024-11-06



# **Declaration information**

CEN standard EN 15804 served as the core PCR					
Independent third-party verification of the declaration and data	Independent third-party verification of the declaration and data				
☐ EPD process certification ☒ EPD verification					
Third party verifier: Marcel Gómez Marcel Gómez Consultoría Ambiental info@marcegomez.com	40				
Procedure for follow-up of data during EPD validity involves third party verifier:					
□ Yes ⊠ No					

The EPD owner has the sole ownership, liability, and responsibility for the EPD. EPDs of construction products may not be comparable if they do not comply with EN 15804.



# **Company information**

Owner of the EPD: SCHWENK Latvija SIA

Lielirbes 17A-28 Riga LV-1046, Latvia www.schwenk.lv

<u>Description of the organisation</u>: SCHWENK was founded in 1847 in Ulma, Germany. This is the oldest family company in the German construction materials sector, which is also one of the most innovative and modern companies. SCHWENK has a strong experience in the production of cement, concrete, sand & gravel and pumps in one value-added chain. There is several cement plants in Europe but also in Namibia. SCHWENK Latvija employs around 350 staff and is the only cement plant in Latvia. With an annual production capacity of 1.6 million tonnes, it can supply cement, ready-mix concrete, aggregates and a range of other construction products and services.

For additional information about SCHWNEK Latvija please visit the company web site at www.schwenk.lv

<u>Product-related or management system-related certifications</u>: ISO 50001:2012, ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 – certificates.

Name and location of production site: Brocēni cement plant in Latvia





### **Product information**

<u>Product name:</u> This product family covers the following references

CEM I 52.5 N

• CEM I 42.5 R

UN CPC code: 3744

<u>Geographical scope</u>: Manufactured in Latvia Use and end of life not included in the study Product description: Cement is a hydraulic binder. It is a finely ground inorganic material which, when mixed with water, forms a paste which sets and hardens by means of hydration reactions and processes. After hardening, it retains its strength and stability even under water.

#### Technical characteristics:

Product references	Compressive strength class (acc. to /DIN EN 197-1/	Application
CEM I 52.5 N	52.5 N/mm²	The main application of cement is in the production of concrete goods, concrete precast, ready-mix concrete.
CEM I 42.5 R	42.5 N/mm²	The main application of cement is in the production of concrete goods, concrete precast, ready-mix concrete.

#### LCA information

<u>Standard compliance:</u> The LCA study has been in compliance with the EN 15804 and the EN 16908

Declared unit: 1000 kg

Reference service life: According to EN 16 908, no RSL (Reference service life) is declared for cements as they are intermediate building products.

<u>Time representativeness:</u> Data were collected by SCHWENK Latvija from June 2019 to September 2019 and are representative of 2018 manufacturing technologies.

<u>Database(s)</u> and <u>LCA</u> software used: BDD used are CODDE-2018-11, ELCD version 3.2, Ecoinvent 3.0.1 Allocation at the point of substitution. The software used is EIME v5.8.1 Environmental indicators calculated according to EN 15804 (CEM baseline).

#### **Description of system boundaries:**

 According to EN 16908, as cement is an intermediate product with many different final used (ready-mixed concrete, precast concrete, screed, plasters, masonry mortars, etc...), it is generally not possible to provide information about the environmental impacts of the products during the construction, the use and the end of life stages because they greatly depend on the cement end used. Hence a cradle-to-gate LCA is preferred for the cement: including A1 to A3 stages.

Excluded lifecycle stages: From A4 to D

<u>Cut-off criteria</u>: Flows that can be excluded from the study because of the difficulty of attributing them to a particular reference flow are the following:

- The lighting, heating, sanitation and cleaning of facilities
- The transportation of employees and the staff catering facilities.
- The manufacture and maintenance of production tools and infrastructures
- Flows from R&D, administrative, management, and marketing poles.



The proportion of non-modelled elements is in compliance with the 1 % of renewable and non-renewable primary energy usage and the 1%-in-weight cut-off rule over the life-cycle considered. The total of neglected input flows per module, e.g. per module A1-A3 shall be a maximum of 5 % of energy usage and mass.

More information: cement products are manufactured from a succession of three fabrication processes:

- Process 1 "Preparation of raw materials": production of clinker from raw materials (limestone, clay, sand ...)
- Process 2 "Clinker burning": raw materials are burned to form clinker
- Process 3 "Cement grinding and storage": other cementitious materials are added to the clinker to form cement
- For the cement products manufacturing, different alternatives to fossil fuels are used at Brocēni cement plant:
  - o used tires

#### tyre fluffy

- NPS: Neutralized Polluted Soil obtained by mixing Sulphur Acid Tar Waste (SATW) with raw material mix and wood chips
- SRF: Solid Recovered Fuel produced from municipal waste including paper, card, wood, textiles and plastics
- Energetic consumption and waste production have been allocated per ton of final product.
- The energetic mix used to model the electricity consumption during the cement manufacturing is the 2014 Latvian mix provided by Ecoinvent.

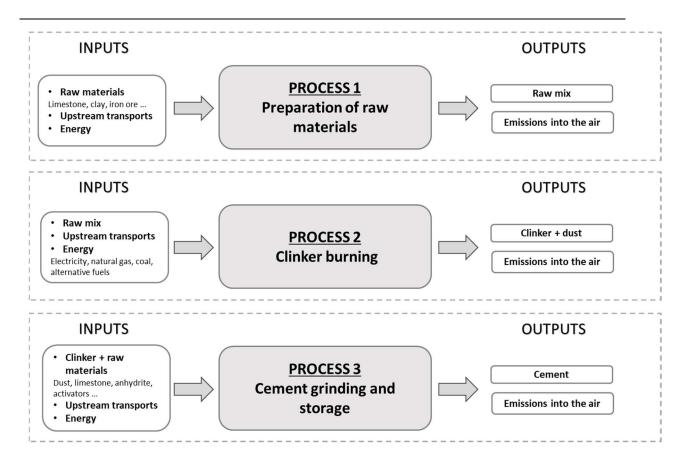
#### Additional environmental information:

- Since September 2019, manufacturing site of Broceni has the "Powered by green" certificate which confirms that
- The company buy electricity produced in Latvia from 100% renewable energy sources.

Cradle-to-gate system boundaries diagram

	Life Cycle Stages															
Product stage			ruction s stage		Use stage						End of li	fe stage		Recov ery stage		
Raw material supply	Transport	Manufacturing	Transport	Construction - installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconstruction - demolition	Transport	Waste processing	Disposal	Reuse - Recovery - Recycling potential
A1	A2	A3	A4	A5	B1	B2	В3	B4	B5	B6	B7	C1	C2	C3	C4	D
	Χ		MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND





## **Content declaration**

#### **Product**

Materials / chemical substances	CEM I 52.5 N	CEM I 42.5 R	
Clinker	95-100%	95-100%	
Slag	-	-	
Limestone	0-5%	0-5%	
Minor constituents	<0,5%	<0,5%	

During the life cycle of the product any hazardous substance listed in the "Candidate List of Substances of Very High Concern (SVHC) for authorization" has been used in a percentage higher than 0.1% of the weight of the product.

The declared portland cements are low on chromate. By addition of a chromate reducer the contents of water soluble chromium VI < 2 ppm.

#### **Packaging**

<u>Distribution packaging:</u> No packaging, delivered as bulk material <u>Consumer packaging:</u> No packaging, delivered as bulk material

#### **Recycled material**

<u>Provenience of recycled materials (pre-consumer or post-consumer) in the product:</u> Cement products contain the following recycled materials: granulated blast furnace slag and by pass dust.



# **Environmental performance**

# **CEM I 52.5 N and CEM I 42.5 R**

CEM 52.5 N and CEM 42.5 R are the same products, only their commercial reference are different. Hence the environmental impacts are the same for both and they are presented in the same tables.

### Potential environmental impact

PARAMETER	UNIT	A1-A3	A4-D
Global Warming Power (GWP)	kg CO <sub>2</sub> eq.	792	MND
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC 11 eq.	6,79E-06	MND
Acidification potential (AP)	kg SO <sub>2</sub> eq.	2,01	MND
Eutrophication potential (EP)	kg PO <sub>4</sub> 3- eq.	0,438	MND
Formation potential of tropospheric ozone (POCP)	kg C₂H₄ eq.	0,140	MND
Abiotic depletion potential – Elements	kg Sb eq.	1,24E-04	MND
Abiotic depletion potential – Fossil resources	MJ, net calorific value	2412	MND

Remark to Global Warming Potential:

792 kg CO2 eq is the gross GWP, including 111 kg CO2 eq from the incineration of alternatives fuels. This is to ensure comparability across countries of calculated global warming potentials for cements even if the used secondary fuels in other countries do not have waste status. Net value of GWP is so 681 kg CO2 eq.

#### **Use of resources**

PARAMETER	₹	UNIT	A1-A3	A4-D
Primary energy resources –	Use as energy carrier	MJ, net calorific value	179	MND
	Used as raw materials	MJ, net calorific value	0,00	MND
Renewable	TOTAL	MJ, net calorific value	179	MND
Primary energy resources – Non- renewable	Use as energy carrier	MJ, net calorific value	2424	MND
	Used as raw materials	MJ, net calorific value	0,00	MND
	TOTAL	MJ, net calorific value	2424	MND
Secondary m	aterial	kg	3,75	MND
Renewable secondary fuels		MJ, net calorific value	1579	MND
Non-renewable secondary fuels		MJ, net calorific value	2416	MND
Net use of fre	sh water	m <sup>3</sup>	0,635	MND



# Waste production and output flows

#### **Waste production**

PARAMETER	UNIT	A1-A3	A4-D
Hazardous waste disposed	kg	0,00	MND
Non-hazardous waste disposed	kg	0,273	MND
Radioactive waste disposed	kg	1,76E-04	MND

## **Output flows**

PARAMETER	UNIT	A1-A3	A4-D
Components for reuse	kg	0	MND
Material for recycling	kg	0	MND
Materials for energy recovery	kg	0	MND
Exported energy	MJ	0	MND



# References

**EN 15804**: Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction

**EN 16908:** Cement and building lime – Environmental product declarations – Product category rules complementary to EN 15804 (2017)

ISO 14040: Environmental management -- Life cycle assessment -- Principles and framework (2006)

**EIME v5 guides1 2**: for the modelling of the different processes.

# **Contact information**

EPD owner	SCHWENK Latvija Lielirbes 17A-28 Riga			
<b>♥ SCHWENK</b>	LV-1046, Latvia			
	Web	www.schwenk.lv		
LCA author	LCA study managed by Bureau Veritas Latvia a realized by CODDE from LCIE Bureau Veritas			
TA S	LCIE Bureau Veritas 170 rue de Chatagnon 38430 Moirans, France			
1228	Tel	+33 4 76 07 36 46		
L C I E	Email	codde@fr.bureauveritas.com		
	Web	www.codde.fr		
Project management	Bu	ireau Veritas Latvia		
EUVE I	Email	riga@lv.bureauveritas.com		
BUREAU VERITAS	Phone	+37167323246		