

# ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804

Owner of the Declaration	<b>SIA SCHWENK Latvija</b>
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
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Portland-composite cement CEM II/A-M (S-LL) 52.5 N

**SIA SCHWENK Latvija**

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## General Information

<p><b>SIA SCHWENK Latvija</b></p> <hr/> <p><b>Programme holder</b>          IBU - Institut Bauen und Umwelt e.V.          Panoramastr. 1          10178 Berlin          Germany</p> <hr/> <p><b>Declaration number</b>          EPD-CEM-20160146-CAA1-EN</p> <hr/> <p><b>This Declaration is based on the Product Category Rules:</b>          Cement, 07.2014          (PCR tested and approved by the SVR)</p> <hr/> <p><b>Issue date</b>          10/10/2016</p> <hr/> <p><b>Valid to</b>          09/10/2021</p> <div style="text-align: center; margin: 10px 0;">  </div> <hr/> <p>Prof. Dr.-Ing. Horst J. Bossenmayer          (President of Institut Bauen und Umwelt e.V.)</p> <div style="text-align: center; margin: 10px 0;">  </div> <hr/> <p>Dr. Burkhard Lehmann          (Managing Director IBU)</p>	<p><b>Portland - composite cement          CEM II/A-M (S-LL) 52.5 N</b></p> <hr/> <p><b>Owner of the Declaration</b>          SIA SCHWENK Latvija          Lielirbes street 17A-28          LV-1046, Riga</p> <hr/> <p><b>Declared product / Declared unit</b>          Portland - composite cement          CEM II/A-M (S-LL) 52.5 N/ 1 tonne</p> <hr/> <p><b>Scope:</b>          This EPD provides environmental information on Portland - composite CEM II/A-M (S-LL) 52.5 N according /EN197-1/ based on production data of the SIA Schwenk Latvija plant Broceni, Latvia in 2015. The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.</p> <hr/> <p><b>Verification</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">The CEN Norm /EN 15804/ serves as the core PCR</td> </tr> <tr> <td colspan="2" style="text-align: center;">Independent verification of the declaration according to /ISO 14025/</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/> internally</td> <td style="text-align: center;"><input checked="" type="checkbox"/> externally</td> </tr> </table> <hr/> <div style="text-align: center; margin: 10px 0;">  </div> <hr/> <p>Mr Carl-Otto Neven          (Independent verifier appointed by SVR)</p>	The CEN Norm /EN 15804/ serves as the core PCR		Independent verification of the declaration according to /ISO 14025/		<input type="checkbox"/> internally	<input checked="" type="checkbox"/> externally
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## Product

### 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. The declared cement is Portland -composite cement CEM II/A-M (S-LL) 52.5 N according to /EN 197-1:2011  
 Cement — Part 1: Composition, specifications and conformity criteria for common cements /.

For the placing on the market in the EU/EFTA (with the exception of Switzerland) the Regulation (EU) No. 305/2011 applies. The product needs a Declaration of Performance (No 1325-CPR-3309 SIA SCHWENK Latvija 2016) taking into consideration the EN 197-1 and the CE marking.

### Application

For the application and use the respective national provisions apply. The main application of cement is in the production of concrete.

### Technical Data

The Technical Data are listed in the Declaration of Performance. Portland-composite cement CEM II/A-M

(S-LL) 52.5N has a compressive strength according to the standard class 52.5 according to /EN 197-1/. The consistency of performance of cement CEM II/A-M (S-LL) 52.5 N is checked and approved by certification body Inspecta Latvia AS (No of certificate 1325-CPR-3309).

### Constructional data

Name	Value	Unit
Strength class acc. to /DIN EN 197-1/	52.5	N/mm <sup>2</sup>

### Base materials / Ancillary materials

Portland-composite cement CEM II/A-M (S-LL) 52.5 N consists primarily of clinker and other cementitious materials. The average composition of cement type CEM II/A-M (S-LL) is as follows:

Clinker - 80-85%

Clinker is produced from raw materials such as limestone and clay which are crushed, homogenized and fed into a rotary kiln. The raw materials are sintered at a temperature of 1450°C to form new compounds. The components of clinker are mainly calcium oxide (CaO), silica (SiO<sub>2</sub>) and small amounts of aluminium and iron oxide.

Blast furnace slag together with limestone amount to

12-20 %. Minor constituents like anhydrite, dust account for 0-5 %.

declared, the reference service life for cement is irrelevant.

**Reference service life**

This study covers the production stage information (from A1 to A3) of the product. As no use stage is

**LCA: Calculation rules**

**Declared Unit**

The declared unit is 1 ton of Portland-composite cement CEM II/A-M (S-LL) 52.5 N.

Assessment therefore covers modules A1 to A3: extraction and processing of raw materials, transport of raw materials to the factory gate and internal transport and cement production.

Since cement is an intermediate product with many different final uses modules A4, A5, B and C are not declared in the scope of this EPD.

**Declared unit**

Name	Value	Unit
Declared unit	1000	kg
Conversion factor to 1 kg	0.001	-

**Comparability**

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to /EN 15804/ and the building context, respectively the product-specific characteristics of performance, are taken into account.

**System boundary**

Type of the EPD: cradle - to - gate.  
The system boundary of the EPD follows the modular structure according to /EN15804/. The Life Cycle

**LCA: Scenarios and additional technical information**

Since this EPD focuses on the manufacturing stage of Portland -composite cement CEM II/A-M (S-LL) 52.5 N only (modules A1-A3), it was not necessary to develop product level scenarios for this cradle - to gate assessment. Thus, no information on modules A4, B1-B7, C1-C4 & D is provided in this section of the EPD.

## LCA: Results

The table below shows the LCA results for environmental impacts, resource use as well as output flows & wastes categories for the modules declared in this study.

### DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	MND	MND	MND	MND	MNR	MNR	MNR	MND	MND	MND	MND	MND	MND	MND

### RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 tonne of Portland-composite cement CEM II/A-M (S-LL) 52,5 N

Parameter	Unit	A1-A3
Global warming potential	[kg CO <sub>2</sub> -Eq.]	689.00
Depletion potential of the stratospheric ozone layer	[kg CFC11-Eq.]	4.39E-10
Acidification potential of land and water	[kg SO <sub>2</sub> -Eq.]	1.59
Eutrophication potential	[kg (PO <sub>4</sub> ) <sup>3</sup> -Eq.]	0.26
Formation potential of tropospheric ozone photochemical oxidants	[kg ethene-Eq.]	0.11
Abiotic depletion potential for non-fossil resources	[kg Sb-Eq.]	7.70E-4
Abiotic depletion potential for fossil resources	[MJ]	2070.00

### RESULTS OF THE LCA - RESOURCE USE: 1 tonne of Portland-composite cement CEM II/A-M (S-LL) 52,5 N

Parameter	Unit	A1-A3
Renewable primary energy as energy carrier	[MJ]	263.00
Renewable primary energy resources as material utilization	[MJ]	0.00
Total use of renewable primary energy resources	[MJ]	263.00
Non-renewable primary energy as energy carrier	[MJ]	2120.00
Non-renewable primary energy as material utilization	[MJ]	0.00
Total use of non-renewable primary energy resources	[MJ]	2120.00
Use of secondary material	[kg]	0.00
Use of renewable secondary fuels	[MJ]	963.00
Use of non-renewable secondary fuels	[MJ]	1043.00
Use of net fresh water	[m <sup>3</sup> ]	0.90

### RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES:

#### 1 tonne of Portland-composite cement CEM II/A-M (S-LL) 52,5 N

Parameter	Unit	A1-A3
Hazardous waste disposed	[kg]	1.00E-3
Non-hazardous waste disposed	[kg]	3.25
Radioactive waste disposed	[kg]	0.02
Components for re-use	[kg]	0.00
Materials for recycling	[kg]	0.00
Materials for energy recovery	[kg]	0.00
Exported electrical energy	[MJ]	0.00
Exported thermal energy	[MJ]	0.00

1) According to the "polluter pays principle", the system that generates the waste is responsible for declaring the impacts of waste processing until the end - of - waste stage is reached. However, for transparency reasons, the indicated value includes the CO<sub>2</sub>-emissions from waste incineration (gross value). The net value (excluding the CO<sub>2</sub>-emissions from waste incineration) is 598 kg CO<sub>2</sub>-equiv.

## References

### BS EN 197-1

BS EN 197-1:2011 Cement composition, specifications and conformity criteria for common cements. September 2011

### ISO 14025

DIN EN ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

### Institut Bauen und Umwelt

Institut Bauen und Umwelt e.V., Berlin(pub.):  
Generation of Environmental Product Declarations (EPDs);  
[www.ibu-epd.de](http://www.ibu-epd.de)

### EN 15804

EN 15804:2012-04+A1 2013: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

Cycle Assessment and Requirements for the Project Report, Version 1.4 .March 2016

**PCR Part A**

Institute Construction and Environment e.V. (IBU) - Product Category Rules for Building-Related Products and Services, Part A: Calculation Rules for the Life

**PCR Part B**

Institute Construction and Environment e.V. (IBU) - Product Category Rules for Building-Related Products and Services, Part B: Requirements on the EPD for Cement. Version 1.4 .September 2016

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