

# Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

weber Ekspanderende Beton 45 Vinter



The Norwegian EPD Foundation

**Owner of the declaration:**

Saint Gobain Denmark A/S -Weber

**Product:**

weber Ekspanderende Beton 45 Vinter

**Declared unit:**

1 kg

**This declaration is based on Product Category Rules:**

CEN Standard EN 15804:2012+A2:2019 serves as core PCR

NPCR 009:2018 Part B for Technical - Chemical products in the building and construction industry

**Program operator:**

The Norwegian EPD Foundation

**Declaration number:**

NEPD-5233-4551-EN

**Registration number:**

NEPD-5233-4551-EN

**Issue date:** 23.10.2023

**Valid to:** 23.10.2028

**EPD Software:**

LCA.no EPD generator ID: 69433

## General information

### Product

weber Ekspanderende Beton 45 Vinter

### Program operator:

Post Box 5250 Majorstuen, 0303 Oslo, Norway  
The Norwegian EPD Foundation  
Phone: +47 23 08 80 00  
web: [post@epd-norge.no](mailto:post@epd-norge.no)

**Declaration number:** NEPD-5233-4551-EN

### This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR  
NPCR 009:2018 Part B for Technical - Chemical products in the  
building and construction industry

### Statement of liability:

The owner of the declaration shall be liable for the underlying  
information and evidence. EPD Norway shall not be liable with respect  
to manufacturer information, life cycle assessment data and  
evidences.

### Declared unit:

1 kg weber Ekspanderende Beton 45 Vinter

### Declared unit with option:

A1-A3,A4,A5,C1,C2,C3,C4,D

### Functional unit:

### General information on verification of EPD from EPD tools:

Independent verification of data, other environmental information  
and the declaration according to ISO 14025:2010, § 8.1.3 and § 8.1.4.  
Verification of each EPD is made according to EPD-Norway's  
guidelines for verification and approval requiring that tools are i)  
integrated into the company's environmental management system, ii)  
the procedures for use of the EPD tool are approved by EPD-Norway,  
and iii) the process is reviewed annually by an independent third  
party verifier. See Appendix G of EPD-Norway's General Programme  
Instructions for further information on EPD tools

### Verification of EPD tool:

Independent third party verification of the EPD tool, background data  
and test-EPD in accordance with EPDNorway's procedures and  
guidelines for verification and approval of EPD tools.

Third party verifier:

Anne Rønning, Norsus AS  
(no signature required)

### Owner of the declaration:

Saint Gobain Denmark A/S -Weber  
Contact person: Eirini Adamopoulou  
Phone: 004542127774  
e-mail: [Eirini.Adamopoulou@saint-gobain.com](mailto:Eirini.Adamopoulou@saint-gobain.com)

### Manufacturer:

Saint Gobain Denmark A/S -Weber  
Silovej 3  
Dk 2690 Karlslunde, Denmark

### Place of production:

Saint Gobain Weber Karlstrup, Denmark  
  
Karlstrup, Denmark

### Management system:

DS/EN ISO 14001, DS/EN ISO 9001.

### Organisation no:

59 98 30 16

**Issue date:** 23.10.2023

**Valid to:** 23.10.2028

### Year of study:

2022

### Comparability:

EPD of construction products may not be comparable if they not  
comply with EN 15804 and seen in a building context.

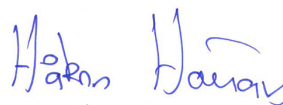
### Development and verification of EPD:

The declaration is created using EPD tool lca.tools ver EPD2022.03,  
developed by LCA.no. The EPD tool is integrated in the company's  
management system, and has been approved by EPD Norway.

Developer of EPD: Eirini Adamopoulou

Reviewer of company-specific input data and EPD: Helene Løvkvist  
Andersen

### Approved:



Håkon Hauan  
Managing Director of EPD-Norway

## Product

### Product description:

Ekspanderende Beton 45 Vinter is used for horizontal joints between concrete elements as well as for recasting columns and grouting concrete element decks. The product can be used in temperatures down to  $\div 5$  °C and must be poured within 20 minutes of mixing.

For further information, see <https://www.saint-gobain.dk/produkt/weber-ekspanderende-beton-45-vinter>

### Product specification

Materials	Value	Unit
Binders	26-32%	Range
Fillers/Aggregates	65-72%	Range
Additives/Packaging	9-13%	Range

### Technical data:

"Compressive strength > 50 MPa

For further information, <https://www.saint-gobain.dk/produkt/weber-ekspanderende-beton-45-vinter>"

### Market:

Denmark

### Reference service life, product

The reference service life of the product is similar to the service life of the building.

### Reference service life, building

60 Years

## LCA: Calculation rules

### Declared unit:

1 kg weber Ekspanderende Beton 45 Vinter

### Cut-off criteria:

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances.

### Allocation:

The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

### Data quality:

Specific data for the product composition are provided by the manufacturer. The data represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on EPDs according to EN 15804 and different LCA databases. The data quality of the raw materials in A1 is presented in the table below.

Materials	Source	Data quality	Year
Additives	ecoinvent 3.6	Database	2019
Aggregate	ecoinvent 3.6	Database	2019
Binder	ecoinvent 3.6	Database	2019
Packaging	ecoinvent 3.6	Database	2019
Additives	ecoinvent 3.6	Database	2020
Packaging	Modified ecoinvent 3.6	Database	2019
Cement	S-P-06379	EPD	2020

### System boundaries (X=included, MND=module not declared, MNR=module not relevant)

Product stage			Construction installation stage		Use stage							End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	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	X	X	MNR	MNR	MNR	MNR	MNR	MNR	MNR	X	X	X	X	X

#### System boundary:

"All processes from raw material extraction, product transport, the construction site, assembly, end of product life and beyond the system boundaries are included in the analysis.

The flow chart below illustrates the system boundaries for the full life cycle analysis."



#### Additional technical information:














## LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

Transport from production place to user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)	
Truck, 16-32 tonnes, EURO 5 (km)	36,7 %	50	0,044	l/tkm	2,20	
Assembly (A5)		Unit	Value			
Electricity, Denmark (kWh)	kWh/DU	0,00				
Product loss during installation (percentage)	Units/DU	0,05				
Waste, packaging, pallet, EUR wooden pallet, reusable, to average treatment (kg)	kg	0,02				
Waste, packaging, paper with plastics or wax (kg)	kg	0,00				
Waste, packaging, plastic (LDPE), to average treatment (kg)	kg	0,07				
Water, tap water (L)	kg/DU	0,11				
De-construction demolition (C1)		Unit	Value			
Demolition of building per kg of cement-based product (kg)	kg/DU	1,00				
Transport to waste processing (C2)		Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, 16-32 tonnes, EURO 5 (km)	36,7 %	30	0,044	l/tkm	1,32	
Waste processing (C3)		Unit	Value			
Waste treatment of cement-based product after demolition (kg)	kg	0,90				
Disposal (C4)		Unit	Value			
Disposal of cement-based product in landfill (kg)	kg	0,10				
Benefits and loads beyond the system boundaries (D)		Unit	Value			
Substitution of primary aggregates with crushed recycled cement-based products (kg)	kg	0,90				
Benefits and loads beyond the system boundaries (D)		Unit	Value			
Binders	Range	26-32%				
Fillers/Aggregates	Range	65-72%				
Additives/Packaging	Range	9-13%				

## LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

Environmental impact										
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
 GWP-total	kg CO <sub>2</sub> -eq	4,87E-01	8,34E-03	7,23E-02	4,00E-03	5,00E-03	6,48E-04	8,22E-04	-2,10E-03	
 GWP-fossil	kg CO <sub>2</sub> -eq	5,27E-01	8,33E-03	3,29E-02	4,00E-03	5,00E-03	6,39E-04	8,20E-04	-2,06E-03	
 GWP-biogenic	kg CO <sub>2</sub> -eq	-4,00E-02	3,40E-06	3,94E-02	7,50E-07	2,04E-06	5,52E-06	9,58E-07	-4,11E-05	
 GWP-luluc	kg CO <sub>2</sub> -eq	2,75E-04	2,91E-06	1,49E-05	3,15E-07	1,75E-06	8,84E-07	2,02E-07	-1,39E-06	
 ODP	kg CFC11 -eq	2,35E-08	1,90E-09	1,74E-09	8,64E-10	1,14E-09	1,27E-10	3,10E-10	-3,75E-10	
 AP	mol H+ -eq	2,60E-03	3,41E-05	1,44E-04	4,19E-05	2,04E-05	5,17E-06	7,30E-06	-1,85E-05	
 EP-FreshWater	kg P -eq	1,27E-05	6,55E-08	6,81E-07	1,46E-08	3,93E-08	4,04E-08	9,30E-09	-5,48E-08	
 EP-Marine	kg N -eq	4,38E-04	1,01E-05	3,02E-05	1,85E-05	6,06E-06	1,52E-06	2,71E-06	-6,43E-06	
 EP-Terrestrial	mol N -eq	4,42E-03	1,12E-04	2,71E-04	2,00E-04	6,70E-05	1,75E-05	2,99E-05	-7,56E-05	
 POCP	kg NMVOC -eq	1,60E-03	3,42E-05	9,49E-05	5,57E-05	2,05E-05	4,68E-06	8,56E-06	-2,00E-05	
 ADP-minerals&metals <sup>1</sup>	kg Sb -eq	2,91E-05	2,26E-07	1,51E-06	6,14E-09	1,35E-07	8,11E-09	7,39E-09	-1,83E-07	
 ADP-fossil <sup>1</sup>	MJ	7,66E+00	1,26E-01	4,25E-01	5,51E-02	7,54E-02	1,98E-02	2,26E-02	-3,49E-02	
 WDP <sup>1</sup>	m <sup>3</sup>	1,05E+01	1,20E-01	7,96E-01	1,17E-02	7,19E-02	2,19E+00	1,39E-01	-1,63E+00	







GWP-total = Global Warming Potential total; GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption

"Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator

## Remarks to environmental impacts



Additional environmental impact indicators										
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
 PM	Disease incidence	2,12E-08	6,00E-10	1,50E-09	5,07E-09	3,60E-10	8,30E-11	1,55E-10	-3,96E-10	
 IRP <sup>2</sup>	kgBq U235 -eq	1,31E-02	5,49E-04	8,58E-04	2,40E-04	3,30E-04	3,33E-04	1,03E-04	-3,20E-04	
 ETP-fw <sup>1</sup>	CTUe	6,46E+00	9,26E-02	3,62E-01	3,01E-02	5,55E-02	1,41E-02	1,23E-02	-3,59E-02	
 HTP-c <sup>1</sup>	CTUh	2,67E-10	0,00E+00	1,40E-11	1,00E-12	0,00E+00	1,00E-12	0,00E+00	-1,00E-12	
 HTP-nc <sup>1</sup>	CTUh	4,16E-09	1,00E-10	2,47E-10	2,80E-11	6,00E-11	1,20E-11	8,00E-12	-4,40E-11	
 SQP <sup>1</sup>	dimensionless	3,27E+00	8,66E-02	2,20E-01	6,69E-03	5,20E-02	1,12E-02	8,69E-02	7,91E-02	

PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Potential Soil Quality Index (dimensionless)

"Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator
2. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.




Resource use										
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
 PERE	MJ	6,06E-01	1,77E-03	3,46E-02	3,00E-04	1,06E-03	1,02E-02	8,08E-04	-8,16E-03	
 PERM	MJ	4,75E-01	0,00E+00	-4,51E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
 PERT	MJ	1,08E+00	1,77E-03	-1,16E-01	3,00E-04	1,06E-03	1,02E-02	8,08E-04	-8,16E-03	
 PENRE	MJ	4,89E+00	1,26E-01	2,86E-01	5,51E-02	7,54E-02	1,99E-02	2,26E-02	-3,68E-02	
 PENRM	MJ	2,80E+00	0,00E+00	-2,66E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
 PENRT	MJ	7,69E+00	1,26E-01	-2,38E+00	5,51E-02	7,54E-02	1,99E-02	2,26E-02	-3,68E-02	
 SM	kg	2,02E-02	0,00E+00	1,01E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
 RSF	MJ	9,83E-03	6,35E-05	6,32E-04	0,00E+00	3,81E-05	0,00E+00	1,68E-05	-1,67E-04	
 NRSF	MJ	2,85E-03	2,27E-04	2,12E-04	0,00E+00	1,36E-04	0,00E+00	3,62E-05	-1,71E-04	
 FW	m <sup>3</sup>	6,90E-03	1,32E-05	4,83E-04	2,83E-06	7,94E-06	3,40E-05	2,78E-05	-1,28E-03	

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non renewable primary energy resources used as raw materials; PENRT = Total use of non renewable primary energy resources; SM = Use of secondary materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

"Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed








End of life - Waste										
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
 HWD	kg	6,56E-03	6,41E-06	3,29E-04	1,62E-06	3,85E-06	1,98E-06	0,00E+00	-8,40E-06	
 NHWD	kg	1,74E-01	6,01E-03	8,53E-02	6,52E-05	3,60E-03	6,26E-05	1,00E-01	-2,55E-04	
 RWD	kg	1,34E-05	8,57E-07	7,84E-07	3,82E-07	5,14E-07	2,10E-07	0,00E+00	-2,76E-07	

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

\*Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed

End of life - Output flow										
Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D	
 CRU	kg	2,02E-02	0,00E+00	1,01E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
 MFR	kg	1,49E-03	0,00E+00	8,28E-02	0,00E+00	0,00E+00	9,00E-01	0,00E+00	0,00E+00	
 MER	kg	6,99E-04	0,00E+00	3,83E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
 EEE	MJ	4,89E-04	0,00E+00	7,50E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	
 EET	MJ	7,39E-03	0,00E+00	1,14E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

\*Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed

Biogenic Carbon Content		
Indicator	Unit	At the factory gate
Biogenic carbon content in product	kg C	0,00E+00
Biogenic carbon content in accompanying packaging	kg C	1,13E-02

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>

## Additional requirements

### Greenhouse gas emissions from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

Electricity mix	Data source	Amount	Unit
Renewable electricity Saint-Gobain, based on 100% hydro power, with Guarantee of Origin from LOS 2021 (kWh)	ecoinvent 3.6	4,26	g CO <sub>2</sub> -eq/kWh

### Dangerous substances

The product contains dangerous substances, more than 0,1% by weight, given by the REACH Candidate List, see table:

Name	CASNo	Amount
amorphous silica (fume)	69012-64-2	1-2%
Flue dust, portland cement	68475-76-3	=3- <5%
Portland cement	65997-15-1	10-25%
Quartz natural sand	14808-60-7	50-75%

### Indoor environment

No test performed

## Additional Environmental Information






### Additional environmental impact indicators required in NPCR Part A for construction products

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWPIOBC	kg CO <sub>2</sub> -eq	5,32E-01	8,34E-03	2,80E-02	4,00E-03	5,00E-03	1,19E-03	0,00E+00	-2,20E-03

GWPIOBC: Global warming potential calculated according to the principle of instantaneous oxidation. In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.

## Bibliography

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 ISO 14044:2006 Environmental management - Life cycle assessment - Requirements and guidelines.  
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 NPCR 009 Part B for technical-chemical products. Ver. 2.0 October 2021, EPD-Norge.

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