

ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025:2006 and
EN 15804:2012+A2:2019/AC:2021 for:



THE INTERNATIONAL EPD® SYSTEM

The International EPD® System:

Program operator: EPD International AB

Registration number: EPD-IES-0017505

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at www.environdec.com



weber REP 38 Cast concrete SR C35/45-8

Version 1

Date of publication: 2024/12/19

Validity: 5 years

Valid until: 2029/12/19

Scope of the EPD®: Finland



Programme information

PROGRAMME: The International EPD® System
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CEN standard EN 15804:2012+A2:2019/AC:2021 as the Core Product Category Rules (PCR)

Product category rules (PCR): PCR 2019:14 Construction Products, version 1.3.2

Complementary PCR: C-PCR-003 Concrete and concrete elements, version 2024-04-30

PCR review was conducted by: The Technical Committee of the International EPD® System. See www.environdec.com for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.

Independent third-party verification of the declaration and data, according to ISO 14025:2006:

☐ EPD process certification ☒ EPD verification

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Approved by: The International EPD® System

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 within the same product category but registered in different EPD programmes may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same version number up to the first two digits) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical DU/FU); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of Comparison. For further information about comparability, see EN 15804:2012+A2:2019/AC:2021 and ISO 14025:2006.

Product information

Product name: weber REP 38 Cast concrete SR C35/45-8

Declared unit: 1 kg

UN CPC CODE: 37510 Non-refractory mortars and concretes

GTIN Number(s): 6415910051112 (25 kg), 6415910051129 (1000 kg)

Company information

Manufacturer: Saint-Gobain Finland Oy, Strömberginkuja 2 FI-00380 Helsinki, Finland

Website: www.saint-gobain.fi

Production plant(s): weber Ojakkala, Finland

Management system - related certifications: ISO 9001 (Certificate No.: EUFI29- 23001898-S1/EN), ISO 14001 (Certificate No.: EUFI29- 23001898-S2/EN)

LCA & EPD Information

Owner of the declaration: Saint-Gobain Finland Oy

Contact person: Anne Kaiser (anne.kaiser@saint-gobain.com)

EPD® prepared by: Päivi Pesu (paivi.pesu@saint-gobain.com) and Yves Coquelet (yves.coquelet@saint-gobain.com)

Type of EPD: Cradle to gate with options, modules C1–C4, module D and with optional modules A4-A5, B1-B7

Geographical scope of the EPD®: Finland

Year of data collection: 2023



Product description

Product description and description of use

This Environmental Product Declaration (EPD®) describes the environmental impacts of 1 kg of weber REP 38 Cast concrete SR C35/45-8.

weber REP 38 Cast concrete SR C35/45-8 is salt and frost resistant repair concrete of class R4 used in structural repair by casting. The product is suitable for structures that require high strength and tightness and face moisture, frost as well as salt stress. Strength class is C35/45-8 according to concrete standard SFS-EN 206. Areas of use are e.g. bridges, balcony slabs, harbor and parking building castings. Also suitable for e.g. filling and post-casting of prefabricated structures and casting balcony slabs (reinforcement according to the designer's instructions).

All technical characteristics and properties for the product can be found on the website: www.fi.weber/betonituotteet-ja-ratkaisut/betonin-korjauslaastit/weber-rep-38-valubetoni-sr-c3545-8

This EPD applies for one specific product produced in one single plant. All figures in this EPD refer to weber REP 38 Cast concrete SR C35/45-8.

Technical data/physical characteristics:

Technical data / physical characteristics		Classification/ standard
Compressive strength class	C35/45-8	SFS-EN 206
Recommended water content	2,5-3,0 L / 25 kg dry mortar	
Operating time	approx. 30 min	
Adhesion strength 28 days	> 2,0 MPa	EN 1542
Compressive strength 28 days	> 45 MPa	EN 12390-3
Unstrained shrinkage 28 days	0,7 mm/m	EN 12617-4
Fire class	A1	EN 13501-1
Frost resistance	Salt-frost resistance	EN 12390-0
Carbonation resistance	Approved	EN 13295
Contents of chlorides	< 0,05%	SFS-EN 1015-17
Air content	5-10%	
Water absorption	≤ 0,5 kg/(m ² *h ^{0.5})	SFS-EN-13057
Volume weight wet	approx. 2200 kg/m ³	

Declaration of the main product components and/or materials

Description of the main components and/or materials:

Product components	Weight (%)	Post-consumer material weight (%)	Biogenic material weight (% and kg C/ DU)
Binder	10 - 25%	0%	0 % and 0 kg
Filler / aggregate	50 - 75%	0%	0 % and 0 kg
Additives	0 – 5%	0%	0 % and 0 kg
Sum	100%	0%	0 % and 0 kg

Packaging materials*	Weight (kg)	Weight-% (vs the product)	Biogenic material, weight (kg C/ DU)
Paper - PE bag	0,003 kg	0,3 %	0,001 kg
LDPE film	<0,001 kg	<0,1 %	0 kg
Wooden pallet	0,02 kg	2 %	0,01 kg

*) Most representative packaging is declared.

Hazardous substances

At the date of issue of this declaration, there is no “Substance of Very High Concern” (SVHC) in concentration above 0,1% by weight, and neither do their packaging, following the European REACH regulation (Registration, Evaluation, Authorization and Restriction of Chemicals).

The verifier and the program operator do not make any claim nor have any responsibility of the legality of the product.

LCA calculation information

Parameter	Information
Type of EPD	Cradle to gate with options, modules C1–C4, module D and with optional modules A4-A5, B1-B7
Declared unit	1 kg of product
System boundaries	Mandatory stages = A1-A3, C1-C4 and D Optional stages = A4-A5, B1-B7
Scenarios	The scenarios included in this study are currently in use and are representative for one of the most probable alternatives.
Reference service life (RSL)	The Reference Service Life (RSL) of the product is 50 years. This 50-year value is the amount of time that we recommend our products last for without refurbishment and corresponds to standard building design life.
Cut-off rules	All data is available, no cut-off rules has been applied. In the case that there is not enough information, the process energy and materials representing less than 1% of the whole energy and mass used can be excluded (if they do not cause significant impacts). The addition of all the inputs and outputs excluded cannot be bigger than the 5% of the whole mass and energy used, as well of the emissions to environment occurred. Flows related to human activities such as employee transport are excluded. The construction of plants, production of machines and transportation systems are excluded since the related flows are supposed to be negligible compared to the production of the building product when compared at these systems lifetime level.
Allocations	Allocation has been avoided when possible and when not possible a mass allocation has been applied. The polluter pays and the modularity principles as well have been followed.
Geographical coverage and time period	Scope: Finland Data is collected from one production site located in Finland Data collected for the year 2023
Background data source	The databases Sphera 2023.2 and ecoinvent v.3.9.1
Software	Sphera LCA for experts (GaBi) 10

LCA scope

System boundaries (X=included. ND=not declared)

	Product stage			Construction stage		Use stage							End of life stage				Benefits & loads beyond the system boundary
	Raw material supply	Transport	Manufacturing	Transport	Construction-Installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-recovery
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Geography	GLO	GLO	FIN	FIN	EU-27	FIN	FIN	FIN	FIN	FIN	FIN	FIN	FIN	FIN	FIN	FIN	FIN
Specific data used ¹	>82% GWP- GHG																
Variation products	one product																
Variation sites	one site																

Life cycle stages



¹ For this study, specific data is considered as energy and water consumptions, and wastes related to the manufacturing process as well as raw materials with EPD.

A1-A3. Product stage

The product stage of the product is subdivided into 3 modules:

A1. Raw materials supply

This module includes the extraction and transformation of raw materials.

A2. Transport to the manufacturer

This module includes the transportation of raw materials and packaging to the manufacturing site. The modelling includes road and sea transportations.

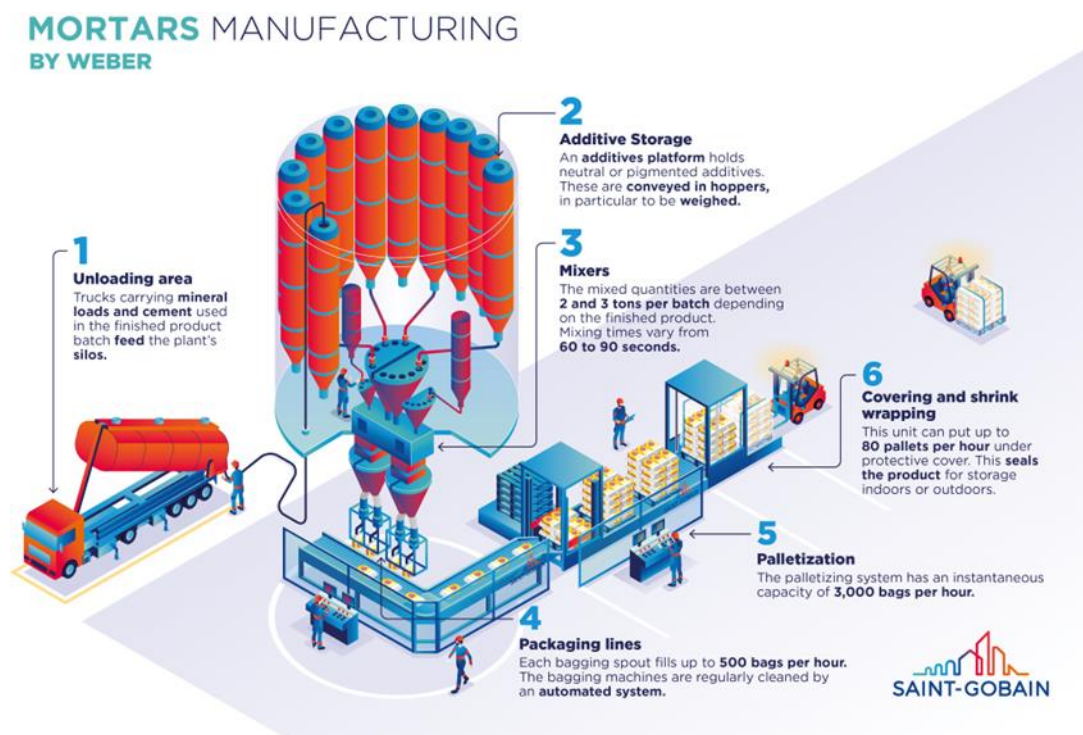
A3. Manufacturing

This module includes the manufacture of products and the manufacture of packaging. The production of packaging material is considered at this stage. Packaging related flows in the production process and all upstream packaging are at this stage. The processing of any waste arising from this stage is also included.

The manufacturing activities include drying, storing, mixing, packing and internal tra

Figure 1. Flow diagram of the Life Cycle

Manufacturing process flow diagram



During the manufacturing process, electricity based on 100% renewable electricity bought with Guarantee of Origin (GO) has been used. The amount of electricity purchases with GO's correspond to 100% of the electricity consumed at the manufacturing site, leaving 0% to be covered by Finnish national grid mix.

Electricity information

The plant based in Ojakkala uses the following electricity description.

Parameter	Value / description
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Location	Electricity purchased by Saint-Gobain Finland Oy
Share of electricity covered by Guarantee of Origin	100% of the electricity consumption is covered by the GO
Geographical representativeness description	Split of electricity bought with Guarantee of Origin: Hydro 100 %
Reference year	For GO: 2023 <i>The GO will be prolonged to be valid at least to the validity of this EPD.</i>
Type of dataset	Cradle to gate from Sphera and ecoinvent databases
Source	Guarantee of Origin: Sphera dataset (2023) and Entelios
CO₂ emission (kg CO₂ eq. / kWh) (Based on Climate Change Fossil Indicator)	Guarantee of Origin: 0,00617 kg of CO ₂ eq /kWh

A4-A5. Construction process stage

The construction process is divided into 2 modules:

A4. Transport to the building site:

This module includes transport from the factory gate to the building site. Transport is calculated based on a scenario with the parameters described in the following table.

Parameter	Value / Description
Fuel type and consumption of vehicle or vehicle type used for transport e.g., long distance truck, boat, etc.	Freight truck, maximum load weight of 27 t and consumption of 0,38 liters diesel per km.
Distance	110 km by truck
Capacity utilization (including empty returns)	90% of the capacity in weight 30% of empty returns

A5. Installation in the building:

This module includes the parameters for installing the product at the building site. The product is mixed with water with mixer requiring electricity. The product can be applied manually, thus does not require additional energy. Other energy use, ancillary materials and emissions are not considered.

Parameter	Value / Description
Ancillary materials for installation (specified by materials)	None
Water use	0,00012 m ³ / kg of product
Other resource use	None
Energy use (regional mix) during the installation process	0,00396 MJ/kg electricity (mixing)
Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)	5% for product 100% for packaging
Output materials (specified by type) as results of waste processing at the building site e.g., of collection for recycling, for energy recovering, disposal	Product: 100% disposed All packaging: 53% to recycling, 41% to landfill, 6% to recovery to energy
Reuse of pallet	7 times before end-of-life
Distance to waste treatment facilities	50 km to landfill by truck

B1-B7. Use stage

The use stage is divided into the following modules:

- B1: Use
- B2: Maintenance
- B3: Repair
- B4: Replacement
- B5: Refurbishment
- B6: Operational energy use
- B7: Operational water use

Once installation is complete, no actions or technical operations are required during the use stages until the end-of-life stage. The product does not require any energy, water or material input to keep it working. The product covered by this EPD does not require any maintenance. In addition, due to the product durability, maintenance, repair, replacement, or restoration are irrelevant in the specified applications. Declared product performances therefore assume a working life that equals the building's lifetime. For this reason, no environmental loads are attributed to any of the modules between B1 and B7.

C1-C4. End of Life Stage

This stage includes the next modules:

C1. Deconstruction, demolition

The de-construction of the product takes part in the demolition of the entire construction. The energy considered can be seen in table below.

C2. Transport to waste processing

Transport to waste processing.

C3. Waste processing for reuse, recovery and/or recycling

Waste processing for reuse, recovery and/or recycling. Not applicable in this study.

C4. Disposal

The product is conservatively considered fully landfilled at the end of life.

Description of the scenarios and additional technical information for the end of life:

Parameter	Value / Description
Energy for de-construction / demolition	0,045 MJ/kg (diesel)
Collection process specified by type	1 kg of product and part of water mixed in at installation collected with mixed construction waste
Recovery system specified by type	none
Disposal specified by type	1 kg of product and part of water to landfill
Assumptions for scenario development (e.g., transportation)	The waste going to landfill is transported by truck with 27 t payload, consuming 0,38 litres of diesel per km. Distance of transport: 50 km

D. Reuse/recovery/recycling potential

There is no inclusion of secondary materials in the product nor packaging. 100% of wastes are considered landfilled. Reuse, recycling, and/or incineration with energy recovery is considered for the packaging. Therefore, benefits or loads reported on stage D are due to the packaging.

LCA results

As specified in EN 15804:2012+A2:2019/AC:2021 and the Product-Category Rules, the environmental impacts are declared and reported using the baseline characterization factors are from the ILCD. Raw materials and energy consumption, as well as transport distances have been taken directly from the manufacturing plant. Characterization factors of EN15804 are based on EF 3.1.

The estimated impact results are only relative statements which do not indicate the end points of the impact categories, exceeding threshold values, safety margins or risks.

The results of the impact categories abiotic depletion of minerals and metals, land use, human toxicity (cancer), human toxicity, noncancer and ecotoxicity (freshwater) may be highly uncertain in LCAs that include capital goods/infrastructure in generic datasets in case infrastructure/capital goods contribute greatly to the total results. This is because the LCI data of infrastructure/capital goods used to quantify these indicators in currently available generic datasets sometimes lack temporal, technological, and geographical representativeness. Caution should be taken when using the results of these indicators for decision-making purposes.

Since this EPD includes module C, we strongly advise not to use the results of modules A1-A3 without considering the results of module C.

All figures refer to a declared unit of 1 kg of product.

Environmental Impacts

		Product stage	Construction stage		Use stage							End of life stage				Benefits and loads beyond the life cycle
Environmental indicators		A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
	Climate Change [kg CO ₂ eq.]	1,84E-01	7,41E-03	5,04E-02	0	0	0	0	0	0	0	4,27E-03	3,82E-03	0	1,61E-02	-1,85E-03
	Climate Change (fossil) [kg CO ₂ eq.]	2,19E-01	7,32E-03	1,57E-02	0	0	0	0	0	0	0	4,26E-03	3,78E-03	0	1,58E-02	-2,14E-03
	Climate Change (biogenic) [kg CO ₂ eq.]	-3,54E-02	1,94E-05	3,47E-02	0	0	0	0	0	0	0	3,70E-06	1,03E-05	0	2,74E-04	2,65E-04
	Climate Change (land use change) [kg CO ₂ eq.]	1,15E-04	6,89E-05	1,39E-05	0	0	0	0	0	0	0	8,13E-08	3,54E-05	0	4,99E-05	2,94E-05
	Ozone depletion [kg CFC-11 eq.]	4,03E-09	6,51E-16	1,27E-11	0	0	0	0	0	0	0	3,28E-16	4,97E-16	0	4,08E-14	-6,61E-11
	Acidification terrestrial and freshwater [Mole of H ⁺ eq.]	4,19E-04	8,41E-06	3,27E-05	0	0	0	0	0	0	0	6,72E-06	4,87E-06	0	1,14E-04	-1,19E-05
	Eutrophication freshwater [kg P eq.]	7,34E-06	2,71E-08	1,27E-07	0	0	0	0	0	0	0	8,25E-10	1,40E-08	0	3,23E-08	-1,89E-06
	Eutrophication marine [kg N eq.]	2,29E-05	2,87E-06	1,28E-05	0	0	0	0	0	0	0	2,32E-06	1,70E-06	0	2,94E-05	1,71E-06
	Eutrophication terrestrial [Mole of N eq.]	1,69E-03	3,39E-05	1,15E-04	0	0	0	0	0	0	0	2,57E-05	1,99E-05	0	3,24E-04	-2,72E-05
	Photochemical ozone formation - human health [kg NMVOC eq.]	4,23E-04	7,30E-06	3,04E-05	0	0	0	0	0	0	0	7,03E-06	4,27E-06	0	8,87E-05	-1,24E-05
	Resource use, mineral and metals [kg Sb eq.] ²	6,55E-08	4,83E-10	1,98E-09	0	0	0	0	0	0	0	4,31E-11	2,53E-10	0	7,42E-10	-4,80E-10
	Resource use, energy carriers [MJ] ²	8,77E-01	1,01E-01	9,77E-02	0	0	0	0	0	0	0	5,68E-02	5,21E-02	0	2,14E-01	-4,12E-02
	Water deprivation potential [m ³ world equiv.] ²	1,48E-02	8,57E-05	7,63E-03	0	0	0	0	0	0	0	1,10E-05	4,62E-05	0	1,76E-03	2,42E-04

² Disclaimer 2: 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.

Resources Use

Resources Use indicators	Product stage	Construction stage		Use stage							End of life stage				Benefits and loads beyond the life cycle
	A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
 Use of renewable primary energy (PERE) [MJ] ³	7,09E-01	7,16E-03	6,52E-02	0	0	0	0	0	0	0	2,50E-04	3,79E-03	0	3,48E-02	-9,33E-02
 Use of renewable primary energy resources used as raw materials (PERM) [MJ] ³	3,78E-02	0	-3,02E-01	0	0	0	0	0	0	0	0	0	0	0	0
 Total use of renewable primary energy resources (PERT) [MJ] ³	7,47E-01	7,16E-03	-2,37E-01	0	0	0	0	0	0	0	2,50E-04	3,79E-03	0	3,48E-02	-9,33E-02
 Use of non-renewable primary energy (PENRE) [MJ] ³	6,16E-01	1,01E-01	8,13E-02	0	0	0	0	0	0	0	5,69E-02	5,23E-02	0	2,14E-01	-4,12E-02
 Non-renewable primary energy resources used as raw materials (PENRM) [MJ] ³	4,19E-01	0	7,82E-03	0	0	0	0	0	0	0	0	0	0	0	0
 Total use of non-renewable primary energy resources (PENRT) [MJ] ³	1,03E+00	1,01E-01	8,91E-02	0	0	0	0	0	0	0	5,69E-02	5,23E-02	0	2,14E-01	-4,11E-02
 Input of secondary material (SM) [kg]	5,25E-02	0	0	0	0	0	0	0	0	0	0	0	0	0	0
 Use of renewable secondary fuels (RSF) [MJ]	1,30E-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0
 Use of non-renewable secondary fuels (NRSF) [MJ]	1,39E-01	0	0	0	0	0	0	0	0	0	0	0	0	0	0
 Use of net fresh water (FW) [m ³]	5,21E-04	7,89E-06	1,87E-04	0	0	0	0	0	0	0	4,08E-07	4,15E-06	0	5,40E-05	5,63E-06

³ From EPD International Construction Product PCR 1.3.2 (Annex 3). The option B was retained to calculate the primary energy use indicators.

Waste Category & Output flows

		Product stage	Construction stage		Use stage							End of life stage				Benefits and loads beyond the life cycle
Waste Category & Output Flows		A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational	B7 Operational water	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
	Hazardous waste disposed (HWD) [kg]	9,80E-05	3,75E-13	1,09E-08	0	0	0	0	0	0	0	1,64E-13	1,62E-13	0	4,65E-12	-1,20E-07
	Non-hazardous waste disposed (NHWD) [kg]	5,40E-02	1,46E-05	5,74E-02	0	0	0	0	0	0	0	1,18E-05	7,97E-06	0	1,07E+00	-2,33E-04
	Radioactive waste disposed (RWD) [kg]	9,43E-06	1,31E-07	4,16E-06	0	0	0	0	0	0	0	6,57E-08	9,78E-08	0	2,44E-06	-4,64E-08
	Components for re-use (CRU) [kg]	0	0	1,84E-02	0	0	0	0	0	0	0	0	0	0	0	0
	Materials for Recycling (MFR) [kg]	9,82E-02	0	5,07E-03	0	0	0	0	0	0	0	0	0	0	0	0
	Material for Energy Recovery (MER) [kg]	2,17E-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Exported electrical energy (EEE) [MJ]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Exported thermal energy (EET) [MJ]	7,22E-03	0	3,35E-02	0	0	0	0	0	0	0	0	0	0	0	0

Supplementary indicator for climate impact (according to PCR)

		Product stage	Construction stage		Use stage							End of life stage				Benefits and loads beyond the life cycle
Environmental indicators		A1 / A2 / A3	A4 Transport	A5 Installation	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Operational energy use	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
	GWP-GHG / GWP-IOBC [kg CO ₂ eq.] ⁴	2,20E-01	7,39E-03	1,58E-02	0	0	0	0	0	0	0	4,26E-03	3,81E-03	0	1,59E-02	-2,11E-03

Information on biogenic carbon content

		At factory gate
Biogenic Carbon Content in kg C		A1 / A2 / A3
	Biogenic carbon content in product [kg]	0
	Biogenic carbon content in packaging [kg]	1,04E-02

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO₂.

The packaging contains biogenic carbon due to wooden pallet and paper in bag.

⁴ The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

References

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2. ISO 14044:2006: Environmental Management-Life Cycle Assessment-Requirements and guidelines.
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4. EN 998-1:2016 Specification for mortar for masonry Rendering and plastering mortar
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6. EPD International (2021) General Programme Instructions for the International EPD® System. Version 4.0. www.environdec.com.
7. EN 15978 Sustainability of construction works - Assessment of environmental performance of buildings - Calculation method
8. The International EPD System PCR 2019:14 Construction products and Construction services. Version 1.3.2
9. The International EPD System c-PCR-003 (to PCR 2019:14) Concrete and concrete elements (EN 16757:2022). Version 2024-04-30.
10. European Chemical Agency, Candidate List of substances of very high concern for Authorization. <https://echa.europa.eu/candidate-list-table>
11. Project report for the verification of the Environmental Product Declaration of weber products, Saint-Gobain Finland Oy, 2024. LCA report-Mortar_2024_v2_Ojakkala.docx