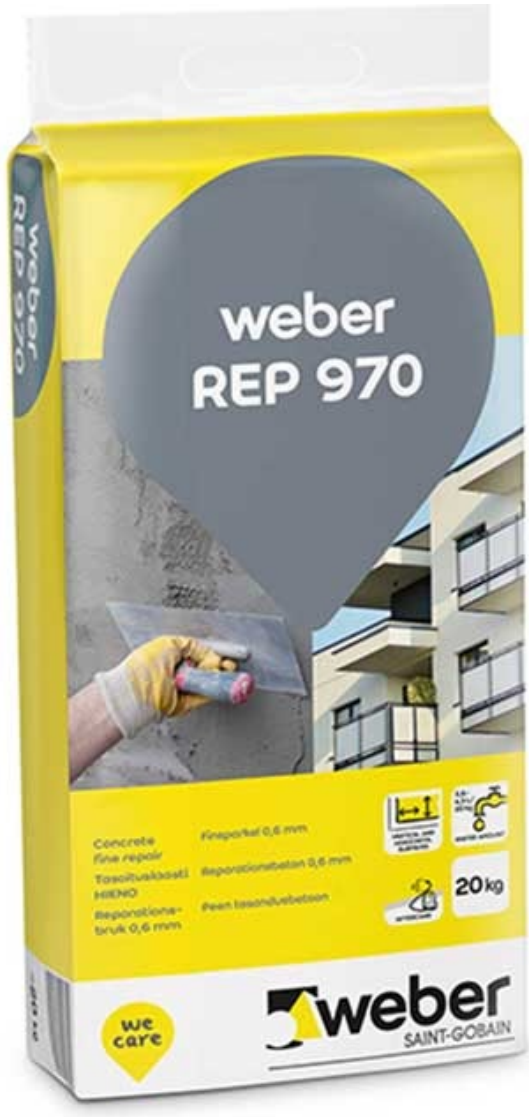
epd-norge
Global program operatør

Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

weber REP 970 Concrete fine repair (weber REP 970 Tasoituslaasti HIENO)



weber SAINT-GOBAIN

The Norwegian EPD Foundation

Owner of the declaration:
Saint-Gobain Finland Oy

Product:
weber REP 970 Concrete fine repair (weber REP 970 Tasoituslaasti HIENO)

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-3596-2261-EN

Registration number:
NEPD-3596-2261-EN

Issue date:
30.06.2022

Valid to:
30.06.2027

ver-140723

EPD Software:
LCA.no EPD generator ID: 50128

General information

Product

weber REP 970 Concrete fine repair (weber REP 970 Tasoituslaasti HIENO)

Owner of the declaration:

Saint-Gobain Finland Oy
Contact person: Anne Kaiser
Phone: +358400289933
e-mail: anne.kaiser@saint-gobain.com

Program operator:

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

Manufacturer:

Saint-Gobain Finland Oy
P.O. Box 70
Fi-00381 Helsinki, Finland

Declaration number:

NEPD-3596-2261-EN

Place of production:

Saint-Gobain Weber Parainen
Parainen Premix plant, Kalkkitehtaantie
21600 Parainen, Finland

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

Management system:

ISO 9001:2015, ISO 14001:2015 and OHSAS 18001:2007

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.

Organisation no:

FI09515553

Declared unit:

1 kg weber REP 970 Concrete fine repair (weber REP 970 Tasoituslaasti HIENO)

Issue date:

30.06.2022

Declared unit with option:

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

Valid to:

30.06.2027

Year of study:

2021

Functional unit:

Not relevant

Comparability:

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

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

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: Päivi Pesu

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

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:

Approved:

Håkon Hauan
Managing Director of EPD-Norway

Anne Rønning, Norsus AS
(no signature required)

Product

Product description:

weber REP 970 Concrete fine repair is salt and frost resistant, class R3 repair mortar. It is grey in colour and maximum grain size 0.6 mm. The purpose of the product is to close pores that occur in concrete surfaces and to level uneven surfaces prior to coating according to concrete repair principles 3.1. and 3.3. It gives extra support to reinforcement by slowing down the penetration of humidity and carbon dioxide into the substrate. The product can be applied by spraying or manually. It is cement based and polymer-modified (PMC). weber REP 970 Concrete fine repair is approved in the bridge repair instructions (SILKO) of the Finnish Road Authority. Delivered in 20 kg bags. GTIN 6415910020729.

Product specification

The composition of the product is described in the following table:

Materials	Value	Unit
Binder	20-40	%
Aggregate	50-80	%
Additives	1-3	%
Packaging, PE	0,004	kg
Packaging, pallet	0,021	kg

Technical data:

weber REP 970 Concrete fine repair is produced according to the requirements of R3 class according to SFS-EN 1504-3:2006 (Product intended for tructural repair of concrete as polymermodified cementious mortar for concrete repair according principles 3.1 and 3.3).

Material consumption: approx. 2 kg/m2/mm
Recommended layer thickness: 0-5 mm
Recommended water content: 3.6-4.0 l/20 kg
Mixed volume: approx. 12-13.6 l/20 kg

More information: www.fi.weber/betonit/betonin-korjauslaastit/weber-rep-970-tasoituslaasti-hieno

Market:

Nordic and Baltic countries

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 REP 970 Concrete fine repair (weber REP 970 Tasoituslaasti HIENO)

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
Filler	ecoinvent 3.6	Database	2019
Packaging	ecoinvent 3.6	Database	2019
Additives	LCA.no	Database	2021
Packaging	Modified ecoinvent 3.6	Database	2019
Cement	Supplier	EPD	2021

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

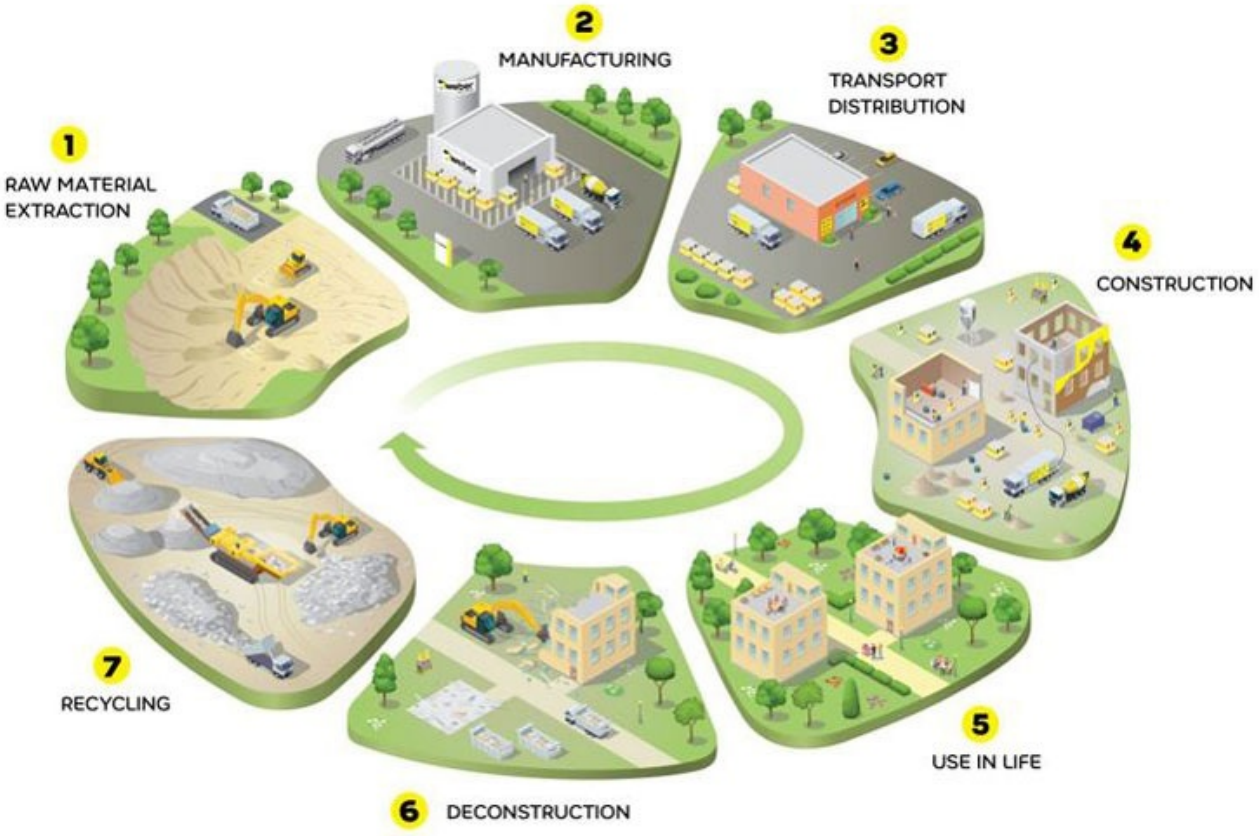
Product stage			Construction installation stage		Use stage							End of life stage				Beyond the system boundaries
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	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 materials extraction to product transportation to the building site, assembly, as well as end of life stage and phases beyond the system boundary (A1-A5, C1-C4, D) are included in the analysis.

The basic production process comprises of mixing raw materials together. Ready mixed product is then packed into small bags. At assembly phase, water is added according to instructions and it is mixed.
When building is demolished at the end-of-life, the structure with mortar integrated into concrete slab are crushed. 90% of crushed concrete is recycled and used to replace natural gravel in soil construction, remaining 10% being disposed to landfill.

System boundaries are illustrated in the picture below.



Additional technical information:

The LCA calculation has been made taking into account the fact that during the manufacturing process 100% renewable electricity is used. This 100% renewable electricity bought is evidenced by Guarantee of Origin certificates (GOs) from LOS, valid for the study year (2021).

Unused product powder is classified as hazardous waste. Product hardens after adding water in 5 to 6 hours and can then be disposed as mixed construction waste.

LCA: Scenarios and additional technical information

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

The results of stage A4 (transportation of product) in the table of this EPD refer to transportation in Finland (average distance 2021). This product may also be delivered to the countries in the table "Additional A4 information". In order to adapt the impact of transportation to these countries, A4 figures from this EPD shall be multiplied by the multiplication factors below.

At installation stage, it is assumed that mixing is done by electric mixer. Electricity mix used is that of Finland. Material loss is considered to be 0.

At end of life stage, it is assumed that all demolition waste is collected and 90% of crushed concrete is recycled and 10% is disposed into landfill. Transport distance to processing is estimated to be 30 km.

Transport from production place to user (A4)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, over 32 tonnes, EURO 5 (km)	53,3 %	206	0,023	l/tkm	4,74

Transport from production place to user (A4)	Unit	Value			
Tullinge, Sweden (truck / ferry 384 km)	Multiplication factor GWP/A4	2,20			
Lillestrøm, Norway (truck / ferry 871 km)	Multiplication factor GWP/A4	4,57			
Karlslunde, Denmark (truck / ferry 1033 km)	Multiplication factor GWP/A4	5,35			
Tallinn, Estonia (truck / ferry 271 km)	Multiplication factor GWP/A4	1,41			
Riga, Latvia (truck / ferry 579 km)	Multiplication factor GWP/A4	2,90			
Kaunas, Lithuania (truck / ferry 848 km)	Multiplication factor GWP/A4	4,21			

Assembly (A5)	Unit	Value			
Electricity, Finland (kWh)	kWh/DU	0,00			
Waste, packaging, pallet, EUR wooden pallet, reusable, to average treatment (kg)	kg	0,02			
Waste, packaging, plastic (LDPE), to average treatment (kg)	kg	0,00			
Water, tap water (L)	kg/DU	0,20			

De-construction demolition (C1)	Unit	Value			
Demolition of building per kg 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, over 32 tonnes, EURO 5 (km)	53,3 %	30	0,023	l/tkm	0,69

Waste processing (C3)	Unit	Value			
Waste treatment of product after demolition (kg)	kg	0,90			

Disposal (C4)	Unit	Value			
Disposal of product in landfill (kg)	kg	0,10			

Benefits and loads beyond the system boundaries (D)	Unit	Value			
Substitution of primary aggregates with crushed recycled inert products (kg)	kg	0,90			

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_2 -eq	4,00E-01	1,87E-02	3,25E-02	4,00E-03	2,73E-03	6,48E-04	8,22E-04	-2,10E-03
	GWP-fossil	kg CO_2 -eq	4,31E-01	1,87E-02	9,72E-04	4,00E-03	2,73E-03	6,39E-04	8,20E-04	-2,06E-03
	GWP-biogenic	kg CO_2 -eq	-3,32E-02	7,68E-06	3,15E-02	7,50E-07	1,12E-06	5,52E-06	9,58E-07	-4,11E-05
	GWP-luluc	kg CO_2 -eq	1,82E-03	5,47E-06	5,94E-06	3,15E-07	7,96E-07	8,84E-07	2,02E-07	-1,39E-06
	ODP	kg CFC11 -eq	1,63E-08	4,33E-09	1,03E-10	8,64E-10	6,30E-10	1,25E-10	3,10E-10	-3,75E-10
	AP	mol H+ -eq	1,48E-03	7,87E-05	3,38E-06	4,19E-05	1,15E-05	5,17E-06	7,30E-06	-1,85E-05
	EP-FreshWater	kg P -eq	3,46E-05	1,43E-07	2,98E-08	1,46E-08	2,08E-08	4,04E-08	9,30E-09	-5,48E-08
	EP-Marine	kg N -eq	2,05E-04	2,37E-05	9,20E-07	1,85E-05	3,45E-06	1,52E-06	2,71E-06	-6,43E-06
	EP-Terrestial	mol N -eq	3,63E-03	2,62E-04	7,93E-06	2,00E-04	3,81E-05	1,75E-05	2,99E-05	-7,56E-05
	POCP	kg NMVOC -eq	1,20E-03	8,41E-05	2,18E-06	5,57E-05	1,23E-05	4,68E-06	8,56E-06	-2,00E-05
	ADP-minerals&metals[1]	kg Sb -eq	2,27E-06	3,20E-07	8,48E-09	6,14E-09	4,66E-08	8,11E-09	7,39E-09	-1,83E-07
	ADP-fossil[1]	MJ	4,36E+00	2,91E-01	1,89E-02	5,51E-02	4,24E-02	1,98E-02	2,26E-02	-3,49E-02
	WDP[1]	m^3	4,36E+00	2,23E-01	9,16E-01	1,17E-02	3,25E-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*10-3 = 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	1,05E-08	1,65E-09	2,40E-11	5,07E-09	2,40E-10	8,20E-11	1,56E-10	-3,94E-10
	IRP[2]	kgBq U235 -eq	9,13E+00	1,27E-03	4,10E-04	2,40E-04	1,85E-04	3,33E-04	1,03E-04	-3,20E-04
	ETP-fw[1]	CTUe	2,15E+00	2,13E-01	1,43E-02	3,01E-02	3,10E-02	1,41E-02	1,23E-02	-3,59E-02
	HTP-c[1]	CTUh	3,74E-10	0,00E+00	0,00E+00	1,00E-12	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	HTP-nc[1]	CTUh	8,36E-09	2,06E-10	1,40E-11	2,80E-11	3,00E-11	1,30E-11	8,00E-12	-4,40E-11
	SQP[1]	dimensionless	2,37E+00	3,34E-01	1,28E-02	6,69E-03	4,86E-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*10-3 = 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	7,08E-01	3,67E-03	5,18E-03	3,00E-04	5,34E-04	1,02E-02	8,08E-04	-8,16E-03
	PERM	MJ	2,89E-01	0,00E+00	-2,89E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	PERT	MJ	9,97E-01	3,67E-03	-9,25E-03	3,00E-04	5,34E-04	1,02E-02	8,08E-04	-8,16E-03
	PENRE	MJ	2,92E+00	2,91E-01	1,95E-02	5,51E-02	4,24E-02	1,99E-02	2,26E-02	-3,68E-02
	PENRM	MJ	1,11E+00	0,00E+00	-1,87E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	PENRT	MJ	4,03E+00	2,91E-01	-1,67E-01	5,51E-02	4,24E-02	1,99E-02	2,26E-02	-3,68E-02
	SM	kg	1,77E-02	0,00E+00	2,53E-06	0,00E+00	0,00E+00	1,71E-05	9,79E-06	-7,05E-05
	RSF	MJ	7,88E-02	1,28E-04	7,20E-05	0,00E+00	1,87E-05	2,07E-04	1,68E-05	-1,67E-04
	NRSF	MJ	1,12E-01	4,30E-04	2,03E-04	0,00E+00	6,26E-05	-1,28E-05	3,62E-05	-1,71E-04
	FW	m^3	2,42E-03	3,32E-05	2,18E-04	2,83E-06	4,83E-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*10-3 = 0,009"
*INA Indicator Not Assessed

End of life - Waste

Indicator		Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
	HWD	kg	4,12E-03	1,59E-05	1,11E-06	1,62E-06	2,32E-06	1,98E-06	1,59E-06	-8,40E-06
	NHWD	kg	6,60E-02	2,53E-02	5,50E-03	6,52E-05	3,69E-03	6,26E-05	1,00E-01	-2,55E-04
	RWD	kg	6,14E-06	1,99E-06	1,87E-07	3,82E-07	2,90E-07	2,10E-07	1,47E-07	-2,76E-07

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

"Reading example: 9,0 E-03 = 9,0*10-3 = 0,009"
*INA Indicator Not Assessed

End of life - Output flow

Indicator		Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
	CRU	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
	MFR	kg	1,99E-03	0,00E+00	2,62E-03	0,00E+00	0,00E+00	9,00E-01	8,92E-06	-1,65E-06
	MER	kg	1,95E-04	0,00E+00	8,00E-07	0,00E+00	0,00E+00	2,07E-06	1,68E-07	-6,17E-05
	EEE	MJ	6,95E-03	0,00E+00	4,51E-04	0,00E+00	0,00E+00	3,55E-06	1,39E-05	-1,49E-05
	EET	MJ	1,19E-01	0,00E+00	6,83E-03	0,00E+00	0,00E+00	5,38E-05	2,10E-04	-2,25E-04

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*10-3 = 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	8,60E-03

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

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 CO2-eq/kWh

Dangerous substances

The product contains no substances given by the REACH Candidate list or the Norwegian priority list. The product is classified as hazardous waste (Avfallsforskriften, Annex III), see table.

Name	CASNo	Amount
Portland cement	65997-15-1	25-50%

Indoor environment

Not relevant

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_2 -eq	2,47E-01	1,87E-02	7,73E-04	4,00E-03	2,73E-03	0,00E+00	0,00E+00	-2,20E-03

GWP-IOBC: 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.

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NPCR 009 Part B for technical-chemical products. Ver. 2.0 October 2021, EPD-Norge.

epd-norway Global Program Operator	**Program operator and publisher** The Norwegian EPD Foundation Post Box 5250 Majorstuen, 0303 Oslo, Norway	Phone: +47 23 08 80 00 e-mail: post@epd-norge.no web: www.epd-norge.no
weber SAINT-GOBAIN	**Owner of the declaration:** Saint-Gobain Finland Oy P.O. Box 70, Fi-00381 Helsinki	Phone: +358400289933 e-mail: anne.kaiser@saint-gobain.com web: www.saint-gobain.fi
LCA.no	**Author of the Life Cycle Assessment** LCA.no AS Dokka 6B, 1671	Phone: +47 916 50 916 e-mail: post@lca.no web: www.lca.no
LCA.no	**Developer of EPD generator** LCA.no AS Dokka 6B,1671 Kråkerøy	Phone: +47 916 50 916 e-mail: post@lca.no web: www.lca.no
ECO PLATFORM EPD VERIFIED	ECO Platform ECO Portal	web: www.eco-platform.org web: ECO Portal