epd-global
Powered by EPD-Norway

Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

Keraflex Maxi S1 grey

EPD-Global

Owner of the declaration:
Mapei AS

Product:
Keraflex Maxi S1 grey

Declared unit:
1 kg

This declaration is based on Product Category Rules:
CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 009:2021 Part B for Technical - Chemical products for building and construction industry

Program operator:
EPD-Global

Declaration number:
NEPD-9073-9073-1

Issue date:
06.05.2026

Latest revision
v1.0 Date: 23.07.2026

Valid to:
06.05.2031

EPD software:
LCAno EPD generator ID: 1691643

General information

Product

Keraflex Maxi S1 grey

Owner of the declaration:

Mapei AS
Contact person: Corporate Environmental Sustainability
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Program operator:

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Manufacturer:

Mapei AS

Declaration number:

NEPD-9073-9073-1

Place of production:

Mapei AS
Vallsetvegen 6
2120 Sagstua, Norway

This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR
NPCR 009:2021 Part B for Technical - Chemical products for building and construction industry

Management system:

ISO 9001, ISO 14001 and ISO 45001

Statement of liability:

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

Organisation no:

911103079

Declared unit:

1 kg Keraflex Maxi S1 grey

Issue date:

06.05.2026

Declared unit with option:

A1, A2, A3, A4, A5, C1, C2, C3, C4, D

Valid to:

06.05.2031

Year of study:

2025

Functional unit:

Functional unit is not covered by this PCR.

Comparability:

EPDs of construction products may not be comparable if they do not comply with EN 15804 and are not viewed 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-Global'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-Global, and iii) the process is reviewed annually by an independent third party verifier. See Appendix G of EPD-Global'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-Global. NEPDT105

Developer of EPD: Laila Danielsen Nicolaisen

Reviewer of company-specific input data and EPD: Laura Carettoni

Verification of EPD tool:

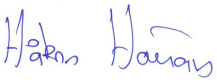
Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPD-Global's procedures and guidelines for verification and approval of EPD tools. NEPDT73

Third party verifier:

Linda Høibye, Life Cycle Assessment Consulting

(no signature required)

Approved:



Håkon Hauan, CEO EPD-Global

Product

Product description:

Keraflex Maxi S1 grey is a high-performance, deformable cementitious grey adhesive, with extended open time and no vertical slip, with Low Dust technology, very low emission of volatile organic compound. It is suitable for bonding all types and sizes of ceramic tiles up to 15 mm thick (double-fired, single-fired, porcelain tiles, klinker, terracotta etc.) on irregular internal and external substrates and reder without skimming the surface prior to bonding. Also suitable for bonding stone on internal and external surfaces, where stone is dimensionally stable and not sensitive to humidity, as well as bonding all types of mosaic on interior and exterior surfaces (also in swimming pools).

Keraflex Maxi S1 grey is delivered in 20 kg bags.

For more information see the TDS (Technical Data Sheet) on Mapei AS website (www.mapei.com/no).

Product specification

Materials	Value	Unit
Binders	0.3-0.4	kg
Fillers	0.5-0.6	kg
Additives	< 0.1	kg
Total	1	kg
Packaging		
Paper	0.004	kg
Plastic	0.0007	kg
Wood	0.025	kg
Total incl. packaging	1.03	kg

Technical data:

Keraflex Maxi S1 grey is a grey powder made from cement, selected graded sand, a high amount of synthetic resins, and special admixtures. It is cementitious (C), improved (2), non-slip (T), extended open time (E), deformable (S1) grey adhesive.

Keraflex Maxi S1 grey meets the requirements of NS-EN 12004-1 "Adhesives for ceramic tiles - Part 1: Requirements, assessment and verification of constancy of performance, classification and marking" for classification of product, where this product is within the C2TES1 class.

Market:

Nordic & 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 Keraflex Maxi S1 grey

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.

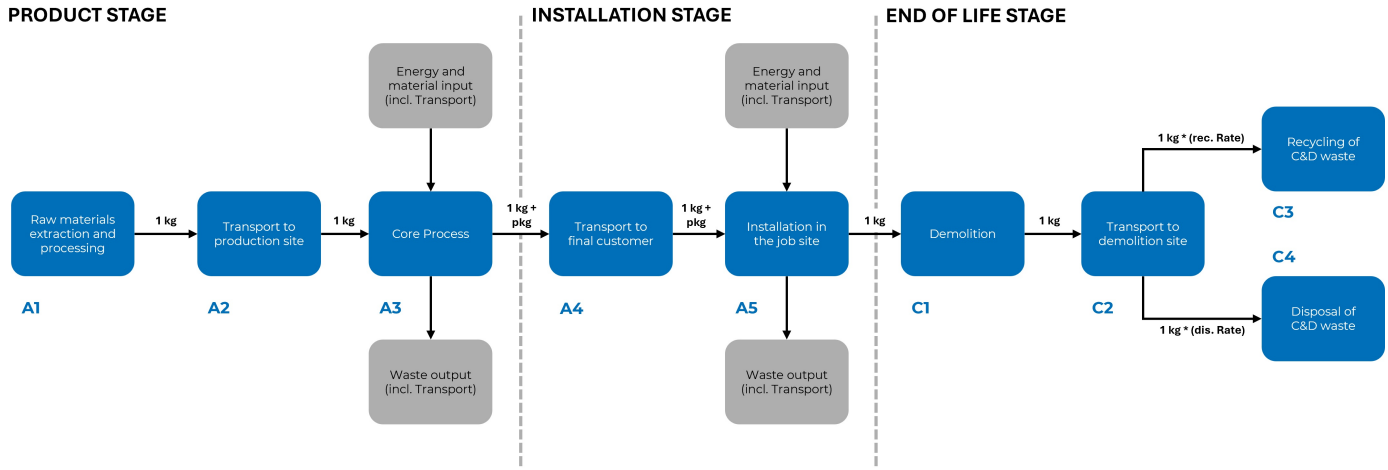
Materials	Source	Data quality	Year
Additives	ecoinvent 3.6	Database	2019
Additives	modified ecoinvent 3.6	Database	2019
Binders	ecoinvent 3.6	Database	2019
Binders	Supplier	EPD	2023
Fillers	ecoinvent 3.6	Database	2019
Fillers	Supplier	EPD	2021
Packaging	ecoinvent 3.6	Database	2019
Packaging - Plastic	ecoinvent 3.10.1	Database	2023
Packaging - Wood	ecoinvent 3.10.1	Database	2023

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	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X

System boundary:

The approach is "cradle to gate" (A1–A3) with modules A4 - A5, C1–C4 and module D. The production process starts from raw materials, that are purchased from external and intercompany suppliers and stored in the plant. Bulk raw materials are stored in specific silos and added automatically in the production mixer, according to the formula of the product. Other raw materials, supplied in bags, big bags or tanks, are stored in the warehouse and added automatically or manually in the mixer. The production is a discontinuous process, in which all the components are mechanically mixed in batches. The semi-finished product is then packaged, put on wooden pallets and stored in the finished products warehouse. The quality of final products is controlled before the sale.



Additional technical information:

LCA: Scenarios and additional technical information

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

The results of stage A4 in the table of this EPD refer to domestic transport set by the PCR. This product may also be delivered to the countries in the table "Additional A4 information". To calculate the GWP of transportation to these countries, the result GWPtot of module A4 from this EPD shall be multiplied by the multiplication factors below. The installation phase (A5) includes the water to be added and the electricity consumption for mixing. The packaging is collected and sent to treatment. The demolition phase (C1) includes the electricity for demolition. The transport of waste is carried out by truck over 100 km (C2). It is assumed that 30% of the product is disposed into landfill and 70% is collected and recycled. Module D contains credits from the recycling of the fraction of product in module C3, at the end of life, the product can be collected and recycled for use in substitution of virgin raw aggregates.

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 6 (km) - RER	36.7 %	300.00	0.043	l/tkm	12.90

Transport from production place to user (A4)	Unit	Value			
Oslo, Norway (truck 90km)	multiplication factor * GWPtot (A4)	0,30			
Kristiansand, Norway (truck 400km)	multiplication factor * GWPtot (A4)	1,33			
Stavanger, Norway (truck 640km)	multiplication factor * GWPtot (A4)	2,13			
Bergen, Norway (truck 530km)	multiplication factor * GWPtot (A4)	1,77			
Trondheim, Norway (truck 420km)	multiplication factor * GWPtot (A4)	1,4			
Tromsø, Norway (truck 1700km)	multiplication factor * GWPtot (A4)	5,67			
Stockholm, Sweden (truck 500km)	multiplication factor * GWPtot (A4)	1,67			
Helsinki, Finland (truck 1200km, ferry 100km)	multiplication factor * GWPtot (A4)	4,23			
Copenhagen, Denmark (truck 680km)	multiplication factor * GWPtot (A4)	2,27			
Oslo, Norway (electric truck 90km)	multiplication factor * GWPtot (A4)	0,21			
Kristiansand, Norway (electric truck 400km)	multiplication factor * GWPtot (A4)	0,92			
Stavanger, Norway (electric truck 640km)	multiplication factor * GWPtot (A4)	1,47			
Bergen, Norway (electric truck 530km)	multiplication factor * GWPtot (A4)	1,22			
Trondheim, Norway (electric truck 420km)	multiplication factor * GWPtot (A4)	0,97			
Tromsø, Norway (electric truck 1700km)	multiplication factor * GWPtot (A4)	3,91			

Assembly (A5)	Unit	Value			
Water, tap water (kg)	kg	0.30			
Electricity, European average (kWh)	kWh	0.004			
Waste, packaging, paper bag, to average treatment (kg)	kg	0.0043			
Waste, packaging, plastic, mixture, to average treatment (kg) - A5, incl. 85 km transp.	kg	0.0007			
Waste, wood, pallet, average treatment (kg) 3.10.1	kg	0.025			

De-construction demolition (C1)	Unit	Value			
Demolition of building per kg of product (kg)	kg	1.00			
Electricity, European average (kWh)	kWh	0.005			

Transport to waste processing (C2)	Capacity utilisation (incl. return) %	Distance (km)	Fuel/Energy Consumption	Unit	Value (Liter/tonne)
Truck, 7.5-16 tonnes, EURO 6 (km) - RER	35.4 %	100.00	0.056	l/tkm	5.60

Waste processing (C3)	Unit	Value			
Waste treatment of product after demolition, recycling (kg)	kg	0.70			

Disposal (C4)	Unit	Value			
Disposal of product in landfill (kg)	kg	0.30			

Benefits and loads beyond the system boundaries (D)	Unit	Value			
Substitution of electricity (MJ)	MJ	0.000000447			
Substitution of thermal energy, district heating (MJ)	MJ	0.000001077			
Substitution, Packaging, plastic film (LDPE) (kg) - RER	kg	0.000217			
Substitution, Packaging, Pallet, EUR wooden pallet, single use (kg)	kg	0.01615			
Substitution of primary aggregates with crushed recycled products (kg)	kg	0.70			

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	A2	A3	A4	A5	C1	C2	C3	C4	D
	GWP-total	kg CO_2 -eq	2.56E-01	2.69E-02	2.25E-03	5.05E-02	5.93E-02	6.14E-03	2.21E-02	5.04E-04	1.29E-03	1.72E-02
	GWP-fossil	kg CO_2 -eq	2.98E-01	2.69E-02	2.14E-03	5.05E-02	3.38E-03	6.12E-03	2.21E-02	4.97E-04	1.28E-03	-6.42E-03
	GWP-biogenic	kg CO_2 -eq	-4.24E-02	3.01E-05	1.01E-04	2.09E-05	5.59E-02	1.57E-05	1.02E-05	4.29E-06	1.09E-06	2.36E-02
	GWP-luluc	kg CO_2 -eq	1.86E-04	1.67E-05	6.08E-06	1.80E-05	4.21E-06	5.25E-06	9.54E-06	6.88E-07	2.52E-07	-2.22E-05
	ODP	kg CFC11 -eq	1.21E-08	4.72E-09	1.85E-10	1.14E-08	1.76E-10	1.04E-09	4.84E-09	9.80E-11	6.26E-10	-8.67E-10
	AP	mol H+ -eq	1.02E-03	2.14E-04	1.56E-05	1.45E-04	1.42E-05	5.42E-05	6.34E-05	4.02E-06	1.25E-05	-3.95E-05
	EP-FreshWater	kg P -eq	3.26E-05	6.15E-07	1.09E-07	4.03E-07	2.89E-07	2.41E-07	2.02E-07	3.14E-08	9.59E-09	-1.63E-06
	EP-Marine	kg N -eq	2.08E-04	5.61E-05	3.16E-06	2.87E-05	3.65E-06	2.00E-05	1.20E-05	1.18E-06	4.70E-06	-1.23E-05
	EP-Terrestial	mol N -eq	2.34E-03	6.24E-04	3.62E-05	3.21E-04	3.45E-05	2.19E-04	1.35E-04	1.36E-05	5.18E-05	-1.41E-04
	POCP	kg NMVOC -eq	7.66E-04	1.83E-04	9.86E-06	1.23E-04	9.66E-06	6.07E-05	5.15E-05	3.64E-06	1.48E-05	-5.24E-05
	ADP-minerals&metals[1]	kg Sb-eq	3.52E-06	3.64E-07	1.11E-07	1.39E-06	1.84E-08	2.17E-08	7.96E-07	6.31E-09	1.14E-08	-1.70E-07
	ADP-fossil[1]	MJ	4.78E+00	4.10E-01	2.57E-02	7.63E-01	4.47E-02	9.88E-02	3.29E-01	1.54E-02	4.15E-02	-1.17E-01
	WDP[1]	m^3	5.11E+00	1.00E+00	8.05E-02	7.38E-01	6.29E-01	6.69E-01	3.94E-01	1.70E+00	8.73E-02	-1.27E+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"

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

This EPD might use cement EPDs as input in which the Net approach* has been applied. See the Data Quality table on page 3.

*The Net approach excludes the emissions from waste incineration used to produce heat required in the cement manufacturing process.

Additional environmental impact indicators

Indicator		Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
	PM	Disease incidence	8.88E-09	1.86E-09	1.85E-10	3.09E-09	9.20E-11	5.10E-09	1.24E-09	6.40E-11	2.67E-10	-7.41E-10
	IRP[2]	kgBq U235 -eq	9.21E-03	1.82E-03	3.86E-04	3.34E-03	3.35E-04	6.23E-04	1.44E-03	2.59E-04	1.80E-04	-7.40E-04
	ETP-fw[1]	CTUe	2.66E+00	3.01E-01	9.54E-02	5.66E-01	3.10E-02	6.07E-02	2.57E-01	1.09E-02	2.05E-02	-5.12E-02
	HTP-c[1]	CTUh	1.02E-10	0.00E+00	4.00E-12	0.00E+00	1.00E-12	2.00E-12	0.00E+00	1.00E-12	1.00E-12	-2.60E-11
	HTP-nc[1]	CTUh	1.84E-09	3.25E-10	1.09E-10	6.18E-10	5.70E-11	5.80E-11	3.09E-10	1.00E-11	1.20E-11	-8.60E-11
	SQP[1]	dimensionless	5.78E+00	3.90E-01	1.13E-02	5.34E-01	1.39E-02	1.73E-02	1.96E-01	8.73E-03	1.51E-01	-2.05E+00

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"

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	A2	A3	A4	A5	C1	C2	C3	C4	D
	PERE	MJ	6.49E-01	1.50E-02	2.59E-01	1.09E-02	7.38E-03	8.78E-03	5.61E-03	7.95E-03	6.38E-04	-1.65E-01
	PERM	MJ	4.18E-01	0.00E+00	0.00E+00	0.00E+00	-4.79E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-2.31E-01
	PERT	MJ	1.07E+00	1.50E-02	2.59E-01	1.09E-02	-4.71E-01	8.78E-03	5.61E-03	7.95E-03	6.38E-04	-3.96E-01
	PENRE	MJ	2.64E+00	4.10E-01	2.58E-02	7.63E-01	4.47E-02	9.89E-02	3.29E-01	1.54E-02	4.15E-02	-9.42E-02
	PENRM	MJ	2.31E+00	0.00E+00	0.00E+00	0.00E+00	-5.33E-02	0.00E+00	0.00E+00	-2.26E+00	0.00E+00	-9.22E-03
	PENRT	MJ	4.95E+00	4.10E-01	2.58E-02	7.63E-01	-8.59E-03	9.89E-02	3.29E-01	-2.24E+00	4.15E-02	-1.03E-01
	SM	kg	1.12E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	RSF	MJ	2.61E-01	9.33E-04	2.04E-04	3.91E-04	5.04E-04	6.18E-04	2.02E-04	0.00E+00	1.32E-05	-7.92E-03
	NRSF	MJ	5.48E-01	7.28E-04	5.18E-04	1.40E-03	1.25E-04	1.47E-04	7.35E-04	0.00E+00	3.79E-05	-1.33E-04
	FW	m^3	3.36E-03	9.41E-05	1.93E-03	8.16E-05	3.36E-04	4.00E-05	3.92E-05	2.64E-05	4.94E-05	-1.07E-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"

End of life - Waste

Indicator		Unit	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
	HWD	kg	2.94E-03	8.84E-05	1.35E-04	3.94E-05	2.62E-05	8.21E-06	1.82E-05	1.54E-06	0.00E+00	-3.55E-04
	NHWD	kg	1.66E-01	2.68E-02	1.71E-03	3.71E-02	2.04E-02	2.13E-04	1.30E-02	4.87E-05	3.00E-01	-1.28E-02
	RWD	kg	6.16E-06	2.44E-06	2.16E-07	5.20E-06	2.60E-07	6.95E-07	2.22E-06	1.63E-07	0.00E+00	-3.42E-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"

End of life - Output flow

Indicator		Unit	A1	A2	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	0.00E+00	0.00E+00
	MFR	kg	0.00E+00	0.00E+00	1.52E-03	0.00E+00	1.43E-02	0.00E+00	0.00E+00	7.00E-01	0.00E+00	0.00E+00
	MER	kg	0.00E+00	0.00E+00	1.27E-03	0.00E+00	3.01E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	EEE	MJ	0.00E+00	0.00E+00	8.35E-04	0.00E+00	2.47E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	EET	MJ	0.00E+00	0.00E+00	1.26E-02	0.00E+00	3.72E-03	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*10-3 = 0.009"

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	1.32E-02

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	Source	Amount	Unit
Electricity, Norway (kWh)	ecoinvent 3.6	24.33	g CO2-eq/kWh

Dangerous substances

The product contains substances given by the REACH Candidate list that are less than 0,1 % by weight.

Indoor environment

The product is certified with an EC1plus class according to GEV-EMICODE.
The product is certified by RTS in class M1.

Additional Environmental Information

Additional environmental impact indicators required in NPCR Part A for construction products											
Indicator	**Unit**	A1	A2	A3	A4	A5	C1	C2	C3	C4	D
GWPIOBC	kg CO_2 -eq	2.99E-01	2.69E-02	2.19E-03	5.05E-02	3.46E-03	6.14E-03	2.21E-02	4.98E-04	1.29E-03	-6.56E-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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