Environmental Product Declaration

In accordance with ISO 14025:2006 and, ISO 21 930:2017 EN 15804:2012+A2:2019/AC:2021 for:

YEP 500 dubble kk

From TJB Försäljning AB

Programme:	The International EPD® System, www.environdec.com
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General information

Programme information

Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
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Accountabilities for PCR, LCA and independent, third-party verification
Product Category Rules (PCR)
Product Category Rules (PCR): PCR 2019:14 Construction products (EN 15804:A2) 1.3.4(valid to 2025-06-20)
PCR review was conducted by: The Technical Committee of the International EPD® System. Chair: Claudia A. Peña 2020-09-17. Contact via info@environdec.com
Life Cycle Assessment (LCA)
LCA accountability: Freelance consultant: Fredrik Broberg
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ EPD verification by individual verifier **Third-partyverification:** **Camilla Landen** EPD Product manager/Lead auditor QMS + sustainability Email Camilla.Landen.ext*bureauveritas.com Telephone: +46 (0)79 3477033 Approved by: EPD International AB
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, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); 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 characterization

factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

Company information

Owner of the EPD:
TJB Försäljning AB
Elisgatan 10
531 34 Vara
Sweden
Info*tjb.se

Contact: Betim Mavraj 070-9949321

Description of the organization:
In 2002, TJB was founded by Tomas Börjesson, then with a handful of own roof products in the range. The vision has since remained unchanged; to develop, manufacture and sell qualitative and smart products that facilitate work on the roof and give our customers a better roofing deal.

Today, TJB's products are available in the construction trade at major nationwide chains but also at independent traders from north to south. In addition to the building trade, we have the honor of being able to deliver products to house factories. The probability is therefore high that there is TJB roofing felt, roof security, roof accessories or roof irrigation on a roof in your immediate vicinity. As TJB is still family-owned, we attach great importance to short decision-making paths to enable a high degree of service and technical know-how. Our hope is to become a close partner to construction trade and house factories in order to develop together with them new products that drive Swedish house building forward! What has brought us to where we are today, we believe, is the desire to always offer a better roofing deal. In order to really be able to offer a better roofing business, we make sure to always put in a little more effort, simplify a little more and never lose focus on sustainability for people, the environment and business.

TJB Försäljning AB develops, manufactures and sells roofing products. TJB as a company and thus each of the employees strives in their respective roles to offer our customers a better roofing deal and thus become the best business partner in roofing. With talented industry colleagues and successful customers, we are humbled by the hard work required to offer a better roofing business. At the same time, we are confident that we can offer just that via consistently high quality in all parts of the business.

Product-related or management system-related certifications: ISO 9001 ISO 14001 Sunda Hus, Basta Byggvarubedömningen and Svanen house portal. The product is also certified and monitored by RISE Institute, certification nr: SC1394-11

Name and location of production site(s):

Varra Slope roofing system.
No.1, Yangxing Industrial Park
Maowei Township, Shuyang
County, 223600, Jiangsu Province
China

Product information

Product name: YEP 500 double KK

Product description:

Property	Value
Size	1m2
Weight per m2	0,52Kg (Conversion factor to mass)

YEP 500 double KK underlay are installed underneath roof coverings such as roof tiles, steel roofs, shingles etc. The product creates a durable water protection layer and provides mechanical protection during the construction phase of the roof.
Underlays for discontinuous roofing are technically defined in EN 13859-1:2014 Flexible sheets for waterproofing

Production starts with a large roll of Polyester similar to a toilet roll being pulled into a bath of Bitumen with various additives, depending on model. The bitumen bath is heated to around 200 degrees Celsius. The speed of the polyester through the bitumen mixture depends on the final weight of the product. The thicker the product, the slower. When the polyester comes up, excess material is scraped off and Polypropylene is applied to the top and bottom. By adding polypropylene to the product, it prevents the layers to stick together when the product is rolled together. The adhesive edge is then applied with protective tape. Then the whole thing goes through a cooling process, until it is rolled up into rolls of varying lengths, depending on which product it is.

UN CPC code: 5453 Roofing and waterproofing services

Geographical scope:
China-Sweden

LCA information

Declared unit:
1m2

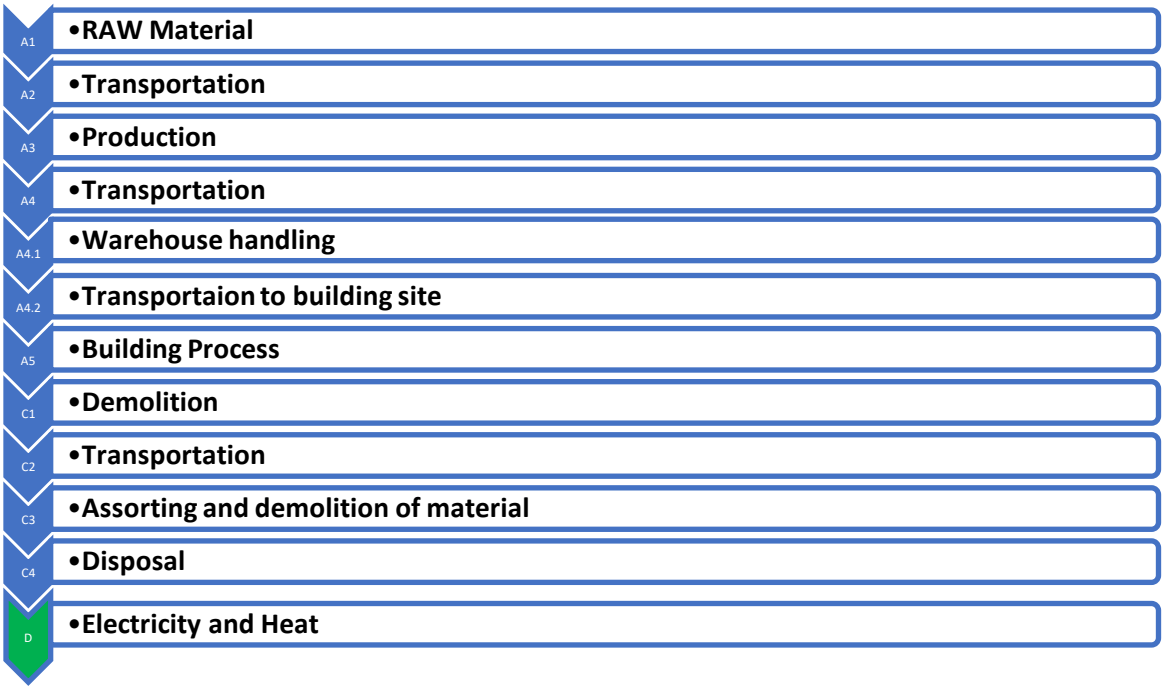
Time representativeness:
Data were collected by TJB Försäljning AB and are representative of 2023 manufacturing. All used datasets are currently valid

Database(s) and LCA software used: Database used is LCA for Experts 10.6.29. Software used: MLC Professional

Description of system boundaries:

Type of EPD: cradle-to-gate with modules C1–C4, module D and optional modules A4-A5

System diagram:



Emissions:
The factors used for this LCA are EN 15804 reference based on EF 3.1

More information:

Website: www.TJB.se

Allocation:
Annual consumption of utilities (energy and non-energy resources), generation of waste and emissions – is allocated to each product group based on economic allocation.

We have allocated the constituent materials and these specific products so that they do not contain the environmental impact of other products.

Polluter pays principle is applied for incoming raw materials of recycled origin, where the product carries the processes required to produce the raw materials from the recycled material, but not the upstream production of the virgin material.

Cut-Off criteria:
All important raw materials and all necessary energy are included. The requirement that a minimum of 95% of the total inflow (mass and energy) be included is met.
Construction of facilities, manufacturing of machinery and transport systems are excluded as related flows are assumed to be negligible compared to the manufacture of construction products when compared at the lifetime level of these systems.

Type of EPD: Specific List of material in YEP 500 KK

Additional information:
The lifetime is 30 years for the product.
YEP 500 Double KK is CE marked.

There is solar power station located on the roof of the factory building, the infrastructure for this is excluded. Also excluded things is the factory building, warehouse, office and canteen.

The products does not contain any of the substances listed on the "Candidate List of Substances of Very High Concern (SVHC) for authorization" (http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp).

List of assumptions:
Assumption A4, A5, C1, C2, C3, C4 and D
C1 to knock down 1/m2 roof, 30 seconds. C2 distance to waste treatment plant, is set to be 100 km.
C3 assumptions the collected goods are mixed with construction waste and sorted, here the waste is incinerated. C4 assumption that 50% goes to landfill.
D A conservative statement is that 50% of YEP 500 double KK goes to energy recovery, Net gains and burdens of replacing electricity from the Swedish power grid and Swedish district heating.

A4 Transportation:

1 trip, using a Lorry Euro 3 (34-40 ton) 27ton payload, distance 100Km, loading 85%, 0,545Kg/m2, Diesel consumption 0,00114Kg/m2

Bitumen	Cas:No 8052-42-2
Polyester	Cas:No 25038-59-9
Polypropylene	Cas:No 9003-07-0
Polyethen	Cas:No 9002-88-4
SBS Polymer	Cas:No 9003-55-8
Chalk(Limestone)	Cas:No 1317-65-3
Styrene	Cas:No 100-42-5
Total	0,526Kg
Squarmeter/ pallet	825m2

2 Trip using a Container ship 5000-200 000 payload dtw, distance 20 800Km, loading 85%, 0,545Kg/m2, Diesel consumption 0,0335Kg/m2

3 trip, using a Lorry Euro 5 (34-40 ton) 27ton payload, distance 400Km, loading 85%, 0,545Kg/m2, Diesel consumption 0,00114Kg/m2

A5 Incineration of the wrapping paper.

Information **A4 travel 1**	**Unit** **(per declared unit)**
Diesel 0,0013 liter /m2/100Km Truck, Euro 3, 28 - 32t gross weight / 22t payload capacity	
Distance 100	km
85	%
0,526	kg/m2

Information A4 travel 2	Unit (per declared unit)
Diesel 0,0327 liter/m2/ 20 800Km Container ship 5000-200 000 deadweight tone	
Distance 20 800	km
85	%
0,526	kg/m2

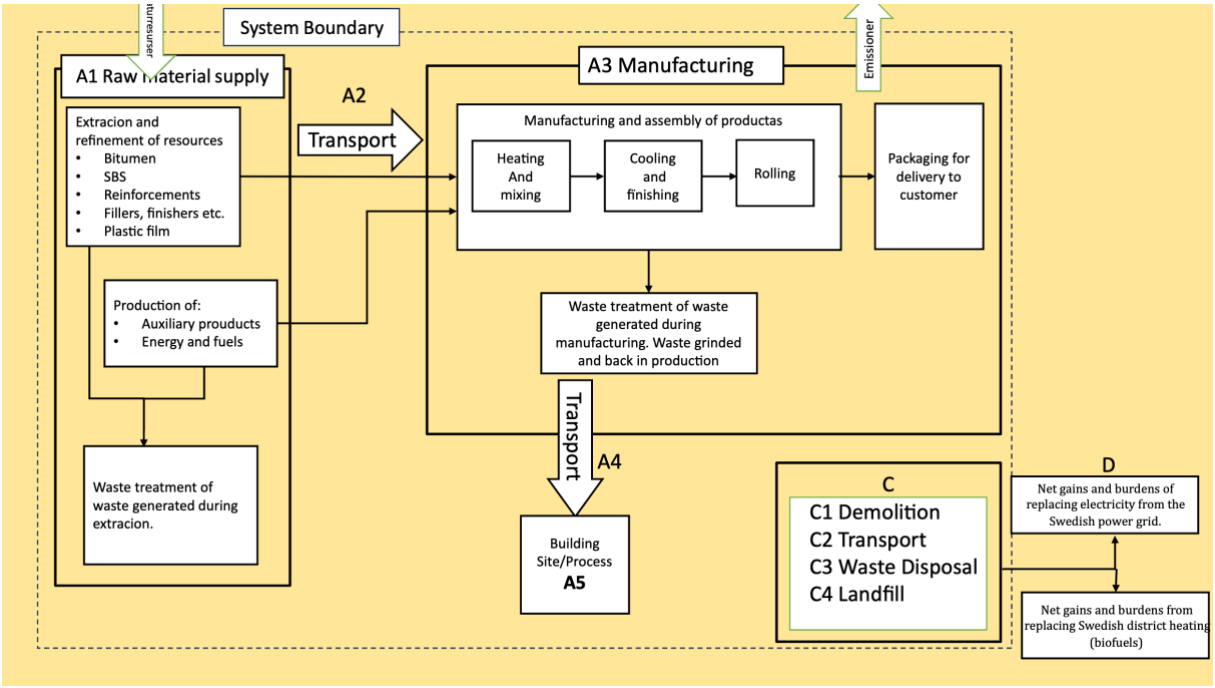
Information A4 travel 3	Unit (per declared unit)
Diesel 0,0011 liter /m2/100Km Truck, Euro 5, 28 - 32t gross weight / 22t payload capacity	
Distance 400	km
85	%
0,526	kg/m2

Electricity dataset in A:3
Electricity from Solar PV- 0,057kg CO2eq/kWh.
Electricity from China Residual mix 0,562Kg CO2eq/kWh

The infrastructure production regarding solar panels is not calculated for.

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
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	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	CN	CN	CN	SE	SE								SE	SE	SE	SE	SE
Specific data used	5,34%			0	0	-	-	-	-	-	-	-	0	0	0	0	0
Variation – products	5%					-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%					-	-	-	-	-	-	-	-	-	-	-	-


System Boundary
Transport
Emissioner
A1 Raw material supply
Extracion and refinement of resources
Bitumen
SBS
Reinforcements
Fillers, finishers etc.
Plastic film
Production of:
Auxiliary prouducts
Energy and fuels
Waste treatment of waste generated during extracion.
A2
Transport
A3 Manufacturing
Manufacturing and assembly of productas
Heating And mixing
Cooling and finishing
Rolling
Packaging for delivery to customer
Waste treatment of waste generated during manufacturing. Waste grinded and back in production
Transport
A4
Building Site/Process
A5
C
C1 Demolition
C2 Transport
C3 Waste Disposal
C4 Landfill
D
Net gains and burdens of replacing electricity from the Swedish power grid.
Net gains and burdens from replacing Swedish district heating (biofuels)

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Bitumen	0,33	0	0
Polyester	0,09	0	0
Polypropylene	0,08	0	0
Polyethene	0,008	0	0
SBS Polymer	0,025	0	0
Chalk	0,02	0	0
Styrene	0,0027	0	0
TOTAL	0,526	0	0
Packaging materials	**Weight, kg**	**Weight-% (versus the product)**	**Weight biogenic carbon, kg C/kg**
Wrapping Paper	0,006	0,0032	0,003
Plastic Film	0,03	0,06	0
Plywood board	0,01	0,019	0,005
Wood pallet	0,003	0,05	0,0015
TOTAL	0,049	0,13	0,0095

A Disclaimer:

The results obtained from modules A1-A3 (A1-A5 for services) of the life cycle analysis (LCA) underlying this EPD are provided for information purposes only. Users are advised not to use these results without considering the results of module C. Any use of the results from modules A1-A3 (A1-A5 for services) without considering the results of module C is at the user's own risk, and the authors and/or performers of this LCA disclaims all liability for such use.

Results of the environmental performance indicators

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

Mandatory impact category indicators according to EN 15804+A2 per declared unit 1m2

Indicator	Unit	A1-A3 Tot	A4	A5	C1	C2	C3	C4	D
GWP-fossil	kg CO2 eq.	6,53E-01	1,37E-01	8,87E-04	3,39E-04	7,32E-03	2,62E-03	3,19E-02	2,89E-01
GWP-biogenic	kg CO2 eq.	2,26E-02	1,81E-04	1,09E-03	7,40E-06	1,70E-04	4,79E-07	2,49E-01	-3,22E-04
GWP-luluc	kg CO2 eq.	1,30E-04	7,48E-05	5,51E-05	5,49E-06	1,21E-04	1,57E-06	2,53E-05	-5,83E-06
GWP-Total	kg CO2 eq.	6,76E-01	1,37E-01	2,03E-03	3,52E-04	7,61E-03	2,62E-03	2,81E-01	2,89E-01
ODP	kg CFC 11 eq	2,98E-12	2,00E-13	7,43E-15	4,81E-17	1,06E-15	8,01E-14	2,69E-14	1,68E-14
AP	mol H+ eq.	1,56E-03	3,99E-03	3,51E-06	1,69E-06	7,32E-05	7,96E-06	7,56E-05	7,16E-05
EP-freshwater	kg P eq.	1,54E-06	1,88E-07	1,90E-08	1,40E-09	3,08E-08	5,83E-08	5,87E-06	-3,32E-07
EP-marine	kg N eq.	4,55E-04	9,86E-04	1,07E-06	7,96E-07	3,69E-05	2,87E-06	7,01E-05	3,54E-05
EP-terrestrial	mol N eq.	4,95E-03	1,08E-02	1,22E-05	8,82E-06	4,08E-04	2,41E-05	2,85E-04	4,51E-04
POCP	kg NMVOC eq	2,09E-03	2,80E-03	3,42E-06	2,25E-06	6,98E-05	6,12E-06	1,68E-04	9,33E-05
ADP-minerals&metals*	kg Sb eq.	1,07E-07	8,03E-09	4,67E-10	2,85E-11	6,27E-10	2,11E-09	5,74E-10	-3,56E-09
ADP-fossil*	MJ	2,72E+01	2,15E+00	6,58E-02	4,31E-03	9,49E-02	2,62E-01	1,99E-01	-6,61E-01
WDP	m3	9,53E-02	6,70E-03	2,85E-04	5,06E-06	1,12E-04	2,71E-03	1,18E-03	3,63E-02

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

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

Additional mandatory and voluntary impact category indicators
Potential environmental impact GWP-GHG – additional mandatory and voluntary indicators, per declared unit.

Results per declared unit

Indicator	Unit	Tot.A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-GHG[1]	kg CO_2 eq.	6,56E-01	1,37E-01	8,97E-04	3,40E-04	7,34E-03	2,63E-03	2,27E-01	2,89E-01

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

Resource use indicators per declared unit 1m2

Indicator	Unit	A1-A3 Tot	A4	A5	C1	C2	C3	C4	D
PERE	MJ	2,79E+00	8,72E-01	3,52E-02	3,71E-04	8,17E-03	3,64E-01	2,11E-02	-6,60E-01
PERM	MJ	3,43E+02	0,00E+00	3,43E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,79E+00	8,72E-01	3,52E-02	3,71E-04	8,17E-03	3,64E-01	2,11E-02	-6,60E-01
PENRE	MJ	1,32E+01	2,15E+00	6,58E-02	4,31E-03	9,49E-02	2,62E-01	1,99E-01	-6,61E-01
PENRM	MJ	1,30E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	1,32E+01	2,15E+00	6,58E-02	4,31E-03	9,49E-02	2,62E-01	1,99E-01	-6,61E-01
SM	kg	2,43E+01	0,00E+00	2,43E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	2,68E-03	1,16E-03	4,60E-05	4,13E-07	9,10E-06	4,83E-04	3,44E-05	6,33E-04

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

Waste indicators per declared unit 1m2

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste disposed	kg	6,41E-09	1,41E-09	5,15E-11	1,65E-13	3,63E-12	5,75E-10	3,58E-11	-2,83E-10
Non-hazardous waste disposed	kg	1,16E-02	1,05E-03	4,03E-05	7,03E-07	1,55E-05	3,84E-04	2,02E-01	4,57E-02
Radioactive waste disposed	kg	2,28E-04	2,15E-04	7,89E-06	7,84E-09	1,73E-07	9,00E-05	2,51E-06	-3,68E-05

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

Output flow indicators per declared unit 1m2

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	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
Material for recycling	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
Materials for energy recovery	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
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,32E-01	0,00E+00	-1,32E-01
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,00E+00	0,00E+00	-1,00E+00

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

Results per declared unit 0,5Kg/m2		
BIOGENIC CARBON CONTENT	**Unit**	**QUANTITY**
Biogenic carbon content in product	kg C	0
Biogenic carbon content in packaging	kg C	0,0095

References

General Programme Instructions of the International EPD® System. Version 4.

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