ENVIRONMENTAL PRODUCT DECLARATION

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

Vario® XtraSafe membrane

Version 1
Date of publication: 2025/03/04
Validity: 5 years
Valid until: 2030/03/03
Scope of the EPD®: Europe

EPD®
THE INTERNATIONAL EPD® SYSTEM

The International EPD® System

Programme operator: EPD international AB

Registration number: EPD-IES-0017304

ECO PLATFORM
EPD
VERIFIED

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

SAINT-GOBAIN

General information

Company information

Owner of the declaration: Saint-Gobain ISOVER
Programme used: EN 15804:2012+A2:2019/AC:2021 Sustainability of construction works – Environmental product declaration - core rules for the product category of construction product and The International EPD® System
PCR identification: PCR 2019:14 Construction Products, version 1.3.4
Prepared by: IVL Swedish Environmental Research Institute, EPD International Secretariat
UN CPC CODE: 3695 Builders' ware of plastics n.e.c.
Product name and location of production site: Vario® XtraSafe is manufactured in Austria and commercialized by Saint-Gobain ISOVER
EPD® prepared by: Aymeric.Collard (Marketing and Development central team), Patricia Jimenez Diaz (Saint-Gobain LCA central team), and Anna Beatriz Suppelsa (Saint-Gobain LCA central team)
Contact: Aymeric.collard@saint-gobain.com, Patricia.jimenezdiaz@saint-gobain.com, AnnaBeatriz.Suppelsa@saint-gobain.com
Geographical scope of the EPD®: Europe
EPD® registration number: EPD-IES-0017304
Declaration issued: 2025/03/04 valid until: 2030/03/03
Demonstration of verification: an independent verification of the declaration was made, according to ISO 14025:2006. This verification was external and conducted by the following third party based on the PCR mentioned above.

Programme information

PROGRAMME:	The International EPD® System
ADDRESS:	EPD International AB - Box 210 60 - SE-100 31 Stockholm - Sweden
WEBSITE:	www.environdec.com
E-MAIL:	info@environdec.com

CEN standard EN 15804:2012 + A2:2019 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): PCR 2019:14 Construction Products, version 1.3.2
PCR review was conducted by: The Technical Committee of the International EPD® System. See www.environdec.com for a list of members.
President: Claudia A. Peña. University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact - Contact via info@environdec.com
Independent third-party verification of the declaration and data, according to ISO 14025:2006:
☐ EPD process certification ☒ EPD verification
Third party verifier: Marcel Gomez (Marcel Gómez Consultoria Ambiental, info@marcelgomez.com)
Approved by: The International EPD© System
Procedure for follow-up of data during EPD validity involves third part verifier: ☐ Yes ☒ No

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 description

Product description and description of use

This Environmental Product Declaration (EPD®) describes the environmental impacts 1 m² of airtight membrane with a thickness of 220 µm and a weight of 0.08 kg/m² and with an estimated useful life of 50 years.

This EPD applies for one specific product coming from one single plant.

The vapor barrier Isover Vario® XtraSafe is a specially developed film based on polyamide, which, in addition to the vapor barrier function, also has a variable equivalent diffusion thickness sd, thanks to which it helps the moisture regime in the construction.

Isover Vario® XtraSafe can be used in all kinds of wall, ceiling and roof structures. Its use is especially advisable, if it is required to reduce dissipation of heat from the interior (air tightness) and stress the constructions are exposed to due to humidity migration from interior to exterior.

Technical data/physical characteristics:
Dynamic diffusion equivalent air layer thickness (Sd value): 0.3 ≤ Sd ≤ 25m (EN ISO 12572)
Tensile strength: CD ≥ 110 N/50mm *(CD: cross direction)*
Tear resistance (nail shank): ≥ 65N
Reaction to fire (Euroclass): E (Declaration according to EN 13501-1)
UN CPC CODE: 3695 Builders' ware of plastics n.e.c

Declaration of the main product components and/or materials

Description of the main components and/or materials for 1 m² of membrane for the calculation of the EPD®:

PARAMETER	VALUE
Quantity for 1 m² of product	0.080 kg of finished product
Thickness	220 µm
Packaging for the transportation and distribution	Wooden pallet: 0.00678 kg/m² Cardboard: 0.01214 kg/m² Polyethylene (low-density): 0.0017 kg/m²
Product used for the Installation	Metallic staples: 0.0039 kg/m²

Description of the main product components and/or materials:

Product components	Weight (%)	Post-consumer material weight (%)	Biogenic material weight-kg C/kg
PA film	35 – 50%	0%	0
PET film	45 – 55%	0%	0
Additives	15 – 20%	0%	0
Sum	100% (0.08 kg/m²)	0%	0
Packaging materials	**Weight (%)**	**Weight-% (vs the product)**	**Biogenic material, weight-kg C/kg**
Wooden pallet	0.007	8%	0
Cardboard	0.012	15%	0
Polyethylene (low-density)	0.002	2%	0
Sum	100% (0.021 kg/m²)	25%	8.11E-03

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

TYPE OF EPD	Cradle to gate with options and module D
DECLARED UNIT	1 m² of airtight membrane installed with a Sd-value from 0.3 m to 25 m with a thickness of 220 µm and a weight of 0.08 kg/m² and with an estimated useful life of 50 years.
SYSTEM BOUNDARIES	Cradle to gate with options, modules A4–A5, B1–B7, C1–C4 and module D
REFERENCE SERVICE LIFE (RSL)	The Reference Service Life (RSL) of the insulation 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	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: Europe Data is collected from Saint-Gobain ISOVER Data collected for the year 2020
BACKGROUND DATA SOURCE	The databases Gabi 2023.2 and ecoinvent v.3.9
SOFTWARE	GaBi 10

According to EN 15804:2012+A2:2019/AC:2021, EPDs of construction products may not be comparable if they do not comply with this standard. According to ISO 21930:2017, EPDs might not be comparable if they are from different programmes.

LCA scope

System boundaries (X=included. MND=module not declared)

	PRODUCT STAGE			CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND 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	EU	AT	AT	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU	EU

Specific data used	2% GWP-GHG[1]
Variation products	0%
Variation sites	0%

Life cycle stages

[1] "Specific data used" refers to the energy consumption .

A1-A3, Product stage

Description of the stage: the product stage of the membrane products is subdivided into 3 modules A1, A2 and A3 respectively “raw material supply”, “transport” and “manufacturing”.

The aggregation of the modules A1, A2 and A3 is mandatory according to the EN 15804 standard. This rule is applied in this EPD.

A1, Raw materials supply
This module takes into account the extraction and processing of all raw materials and energy which occur upstream to the studied manufacturing process.

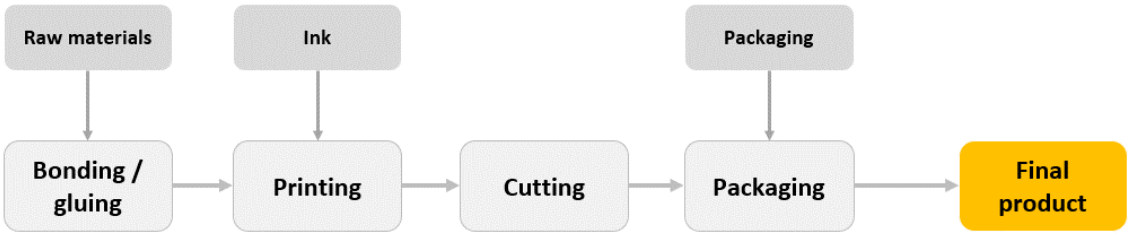
Specifically, the raw material supply covers production of granulate polymers for the film extrusion as well as the glue material.

A2, Transport to the manufacturer
The raw materials are transported to the manufacturing site. In our case, the modeling include: road, sea and rail (average values) of each raw material.

A3, Manufacturing
This module includes the manufacturing of the product and packaging. Specifically, it covers the manufacturing of polymeric membranes, the assembly, winding and packing steps. A loss rate is considered at this step as well as the amount of packaging waste (cardboard mandrel and polyethylene). In addition, the production of packaging is considered at this stage.

Manufacturing process flow diagram

System diagram:



Electricity information

TYPE OF INFORMATION	DESCRIPTION
Location	Representative of electricity consumed by the plant
Geographical representativeness description	Share of energy sources • Biogas: 0.95% • Biomass_solid: 5.39 % • Coal_gases: 2.82 % • Hard_coal: 2.98 % • HFO: 1.45 % • Hydro: 62.81 % • Natural_gas: 12.57 %

	• Photovoltaics: 1.60 % • Wind: 7.66 % • Waste: 1.76 %
Type of dataset	Cradle to gate
Source	Dataset from Gabi 2023.2 database
CO_2 emission kg CO_2 eq. / kWh	0.17 kg of CO_2 eq/kWh Based on Climate Change - fossil indicator

A4-A5, Construction process stage

Description of the stage: the construction process is divided into 2 modules: A4, transport to the building site and A5, installation in the building. Since there is a product loss during installation, the quantification of raw material compensation (A5) and its transport to the building site (A4) are considered.

A4, Transport to the building site: This module includes transport from the production gate to the building site. Transport is calculated based on a scenario with the parameters described in the following table.

PARAMETER	VALUE
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 24 t and consumption of 0.38 liters per km
Distance	1560 km
Capacity utilisation (including empty returns)	100% of the capacity in volume 30% of empty returns
Bulk density of transported products	4620 m² per pallet and 36 pallet per truck
Volume capacity utilisation factor	1

A5, Installation in the building: this module includes:

PARAMETER	VALUE/DESCRIPTION
Materials for installation (specified by materials)	3.9 g/m² of metallic staples *Note: other materials could be necessary for installation of the product.*
Water use	None
Other resource use	None
Quantitative description of energy type regional mix) and consumption during the installation process	None
Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)	10 % membranes and staples: 0.0839 kg/m² Wooden pallet: 0.00678 kg/m² Cardboard: 0.0121 kg/m² Polyethylene (low-density): 0.0017 kg/m²
Distance	50 km to landfill by truck
Output materials (specified by type) as results of waste processing at the building site e.g. of collection for recycling, for energy recovering, disposal (specified by route)	Cardboard and wooden pallets packaging waste is sent to landfill (19%), recycling (57%) and incineration with energy recovery (24%). Polyethylene (low-density) packaging waste is sent to landfill (9%), Recycling (79%) and incineration with energy recovery (12%)[2,3]

[2] Eurostat - UL PCR. (2015). Eurostat, recovery and recycling rates for packaging. Retrieved March 1, 2022, from https://ec.europa.eu/eurostat/web/products-datasets/-/cei_wm020
[3] Global Plastics Outlook | Compare your country. (n.d.). https://www1.compareyourcountry.org/global-plastics-outlook/en/3/3845+3846+3847/default

B1-B7, Use stage (excluding potential savings)

Description of the 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

Description of the scenarios and additional technical information:
The product has a reference service life of 50 years. This assumes that the product will last in situ with no requirements for maintenance, repair, replacement, or refurbishment throughout this period. Therefore, it has no impact at this stage.

C1-C4, End of Life Stage

Description of the stage: this stage includes the next modules:

C1, Deconstruction, demolition
The de-construction and/or dismantling of membranes take part of the demolition of the entire building. There are not inputs or outputs quantified in this step.

C2, Transport to waste processing
The model use for the transportation (see A4, transportation to the building site) is applied.

C3, Waste processing for reuse, recovery and/or recycling
The product is considered to be landfilled without reuse, recovery or recycling.

C4, Disposal
The membrane is assumed to be 100% landfilled.

Description of the scenarios and additional technical information:

PARAMETER	VALUE/DESCRIPTION
Collection process specified by type	The entire product, including any surfacing is collected alongside any mixed construction waste. 0.08 kg of membrane and 0.0039 kg of metallic staples
Recovery system specified by type	There is no recovery, recycling or reuse of the product once it has reached its end of life phase.
Disposal specified by type	100% (0.0839 kg) of membrane and metallic staples is landfilled
Assumptions for scenario development (e.g. transportation)	The waste going to landfill is transported 50 km by truck from deconstruction/demolition sites to landfill

D, Reuse/recovery/recycling potential

100% of membrane waste is landfilled. There is no reuse, nor recovery, nor recycling of this product. Hence, the benefits and load reported on stage D proceed of the recycling and recovery energy of the packaging materials in stage A5.

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 EN15804 based on EF 3.1. Raw materials and energy consumption, as well as transport distances have been taken directly from the manufacturing plant.

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.

All emissions to air, water, and soil, and all materials and energy used have been included.

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 exercised when using the results of these indicators for decision-making purposes.

This EPD including module C, we strongly advise against using the results of modules A1-A3 without considering the results of module C.

All the results refer to a declared unit of 1 m² of airtight membrane installed with a Sd-value from 0.3 m to 25 m, with a thickness of 220 µm and a weight of 0.08 kg/m² and with an estimated useful life of 50 years.

Environmental Impacts

Environmental indicators	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				REUSE, RECOVERY RECYCLING
	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 CO2 eq.]	4.62E-01	1.76E-02	9.60E-02	0	0	0	0	0	0	0	0	1.24E-04	0	7.53E-03	-4.14E-03
Climate Change (fossil) [kg CO2 eq.]	4.82E-01	1.75E-02	6.37E-02	0	0	0	0	0	0	0	0	1.24E-04	0	7.51E-03	2.17E-03
Climate Change (biogenic) [kg CO2 eq.]	-1.99E-02	6.08E-08	3.23E-02	0	0	0	0	0	0	0	0	3.64E-08	0	1.19E-05	-6.32E-03
Climate Change (land use change) [kg CO2 eq.]	2.08E-04	8.26E-06	2.41E-05	0	0	0	0	0	0	0	0	7.08E-09	0	1.92E-07	7.21E-06
Ozone depletion [kg CFC-11 eq.]	6.86E-07	3.11E-10	6.87E-08	0	0	0	0	0	0	0	0	2.64E-12	0	3.23E-11	-4.56E-11
Acidification terrestrial and freshwater [Mole of H+ eq.]	2.08E-03	3.22E-04	2.76E-04	0	0	0	0	0	0	0	0	3.19E-07	0	5.69E-06	2.03E-05
Eutrophication freshwater [kg P eq.]	6.33E-05	4.30E-07	6.43E-06	0	0	0	0	0	0	0	0	1.55E-09	0	6.00E-08	2.08E-06
Eutrophication marine [kg N eq.]	6.68E-04	8.29E-05	1.20E-04	0	0	0	0	0	0	0	0	1.23E-07	0	2.66E-04	1.40E-05
Eutrophication terrestrial [Mole of N eq.]	4.01E-03	9.13E-04	5.89E-04	0	0	0	0	0	0	0	0	1.30E-06	0	2.54E-05	5.85E-05
Photochemical ozone formation - human health [kg NMVOC eq.]	1.39E-03	2.56E-04	1.97E-04	0	0	0	0	0	0	0	0	5.11E-07	0	1.12E-05	5.15E-06
Resource use, mineral and metals [kg Sb eq.][4]	1.18E-04	1.09E-08	1.18E-05	0	0	0	0	0	0	0	0	1.86E-11	0	2.11E-09	-2.58E-08
Resource use, energy carriers [MJ][1]	9.63E+00	2.20E-01	1.13E+00	0	0	0	0	0	0	0	0	1.61E-03	0	1.95E-02	4.82E-03
Water deprivation potential [m³ world equiv.][1]	4.40E-01	6.53E-04	5.16E-02	0	0	0	0	0	0	0	0	3.75E-06	0	1.04E-03	-2.43E-03

[4] 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				D REUSE, RECOVERY, RECYCLING
	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]	6.28E-01	1.23E-03	1.35E-01	0	0	0	0	0	0	0	0	5.82E-06	0	1.06E-03	-1.85E-01
Primary energy resources used as raw materials (PERM) [MJ]	2.97E-01	0	2.97E-02	0	0	0	0	0	0	0	0	0	0	0	1.86E-01
Total use of renewable primary energy resources (PERT) [MJ]	9.25E-01	1.23E-03	1.64E-01	0	0	0	0	0	0	0	0	5.82E-06	0	1.06E-03	1.44E-03
Use of non-renewable primary energy (PENRE) [MJ]	4.54E+00	2.20E-01	6.22E-01	0	0	0	0	0	0	0	0	1.61E-03	0	1.95E-02	-1.60E-02
Non-renewable primary energy resources used as raw materials (PENRM) [MJ]	2.55E+00	0	2.55E-01	0	0	0	0	0	0	0	0	0	0	0	6.84E-02
Total use of non-renewable primary energy resources (PENRT) [MJ]	7.09E+00	2.20E-01	8.78E-01	0	0	0	0	0	0	0	0	1.61E-03	0	1.95E-02	5.24E-02
Input of secondary material (SM) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-7.36E-03
Use of renewable secondary fuels (RSF) [MJ]	9.23E-26	0	9.23E-27	0	0	0	0	0	0	0	0	0	0	0	0.00E+00
Use of non-renewable secondary fuels (NRSF) [MJ]	1.08E-24	0	1.08E-25	0	0	0	0	0	0	0	0	0	0	0	0.00E+00
Use of net fresh water (FW) [m3]	1.05E-02	1.52E-05	1.24E-03	0	0	0	0	0	0	0	0	8.74E-08	0	2.42E-05	-5.49E-05

Waste Category & Output flows

	PRODUCT STAGE	CONSTRUCTION STAGE		USE STAGE							END OF LIFE STAGE				D REUSE, RECOVERY, RECYCLING
Waste Category & Output Flows	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
Hazardous waste disposed (HWD) [kg]	2.50E-11	0	4.17E-10	0	0	0	0	0	0	0	0	0	0	0	-1.90E-13
Non-hazardous waste disposed (NHWD) [kg]	3.51E-04	0	1.87E-03	0	0	0	0	0	0	0	0	0	0	3.96E-03	1.07E-04
Radioactive waste disposed (RWD) [kg]	2.41E-06	0	1.32E-06	0	0	0	0	0	0	0	0	0	0	0	1.51E-06
Components for re-use (CRU) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Materials for Recycling (MFR) [kg]	0	0	9.43E-03	0	0	0	0	0	0	0	0	0	0	0	0
Material for Energy Recovery (MER) [kg]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exported electrical energy (EEE) [MJ]	0	0	4.22E-04	0	0	0	0	0	0	0	0	0	0	0	5.10E-03
Exported thermal energy (EET) [MJ]	0	0	1.20E-03	0	0	0	0	0	0	0	0	0	0	0	1.07E-02

Additional voluntary indicators from EN 15804 (according to ISO 21930:2017)

Environmental 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	B7 Operational water use	C1 Deconstruction / demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse, recovery, recycling
GWP-GHG [kg CO2 eq.][5]	4.92E-01	4.72E-02	1.26E-01	0	0	0	0	0	0	0	0	2.99E-02	0	3.73E-02	2.56E-02

Information on biogenic carbon content

Biogenic Carbon Content	PRODUCT STAGE
	A1 / A2 / A3
Biogenic carbon content in product [kg]	0
Biogenic carbon content in packaging [kg]	8.11E-03

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

The product does not contain biogenic carbon. Regarding packaging, biogenic carbon is quantified due to wooden pallets and cardboard production.

[5] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO2 is set to zero.

References

1. ISO 14040:2006: Environmental Management-Life Cycle Assessment-Principles and framework.
2. ISO 14044:2006: Environmental Management-Life Cycle Assessment-Requirements and guidelines.
3. ISO 14025:2006: Environmental labels and Declarations-Type III Environmental Declarations-Principles and procedures.
4. EN 16783:2017 Thermal insulation products - Product category rules (PCR) for factory made and in-situ formed products for preparing environmental product declarations
5. The general program instructions (GPI) for the international EPD® (version 4.0:2021) www.environdec.com.
6. EN 15804:2019+A2:2019/AC:2021 - Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
7. European Chemical Agency, Candidate List of substances of very high concern for Authorization. http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.asp
8. LCA report for VARIO membranes for Saint-Gobain ISOVER, January 2025