Environmental Product Declaration

In accordance with ISO 14025:2006, EN 15804:2012+A2:2019/AC:2021 and ISO 21930:2017 for

SOLITEX FRONTA PENTA

Breather membrane (WRB) for open-jointed cladding

from

pro clima – MOLL bauökologische Produkte GmbH



Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB Box 21060 SE-10031 Stockholm, Sweden
EPD registration number:	EPD-IES-0022276
Version date:	2026-10-01
Valid until:	2030-04-16
EPD type:	EPD of a specific product

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

General information

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

Product Category Rules (PCR)

CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): PCR 2019:14 Construction Products, version 1.3.4.

UN CPC code: No. 36330: Plates, sheets, film, foil and strip, of plastics, not self-adhesive, non-cellular and not reinforced, laminated, supported or similarly combined with other materials

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

Life Cycle Assessment (LCA)

LCA accountability: Jannik Schulz, María Díaz Cáceres
brands & values GmbH, info@brandsandvalues.com

Third-party verification

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

☑ EPD verification by individual verifier
Third party verifier: Jan Weinzettel, weinzettel@seznam.cz
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, 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 characterisation 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
pro clima / MOLL bauökologische Produkte GmbH
Rheintalstr. 35-43 – 68723 Schwetzingen – Germany
T: +49 (0) 62 02 – 27 82.0; info@proclima.com

Contact
Michael Förster: support@proclima.com

Description of the organisation
pro clima is a pioneer in the intelligent, reliable sealing of building envelopes. The company develops and markets product systems for achieving maximum protection against moisture damage to structures and mould:

- Humidity-variable hydrosafe® high-performance vapour check and airtightness membranes for interior sealing on new buildings and renovation projects.
- Roofing underlays and breather membranes (WRBs) with active moisture transport for permanently protected exterior sealing of roofs and walls.
- Special adhesives and waterproof tapes.
- Sealing grommets as detailed solutions.

Highest quality for optimal performance

- The system products are manufactured using state-of-the-art production processes at leading production facilities in Germany.
- Production is subject to the highest quality standards, ensuring that insulation is reliably protected against moisture damage and mould.
- Highest effectiveness of thermal insulation.
- Reduction of heating costs due to optimal air sealing.
- Dry insulation materials.
- Best possible protection against moisture damage to structures and mould.
- Comfortable interiors in summer and winter.
- Healthy indoor climates.
- Highest ecological value.

Together towards a successful future
People are the focus of every decision at pro clima, and the company's guiding mission is to advance building culture as a whole. To achieve this goal, system products have been developed for over 30 years that are consistently geared to meet the health and comfort needs of users. Many of pro clima's pioneering developments are now established as state-of-the-art approaches. Today, these products are successfully used in over 40 countries worldwide.

Name and location of production site(s)
Manufacturer: pro clima / MOLL bauökologische Produkte GmbH
Location of manufacturing sites: Germany
The declared product is manufactured at two production sites in Germany under contract for pro clima / MOLL bauökologische Produkte GmbH. The cities are not disclosed in this public EPD for reasons of commercial confidentiality, as publication would reveal commercially sensitive supply chain information. The exact production sites are documented in the background report and have been made available to the independent verifier.
Final warehouse and quality control: pro clima / MOLL bauökologische Produkte GmbH, Schwetzingen, Germany

Product-related or management system-related certifications
All production sites are ISO 9001 certified.

Product information

Product name
SOLITEX FRONTA PENTA

Product identification
Breather membrane (WRB) for open-jointed cladding, gap width up to 50 mm (2")

Product description
SOLITEX FRONTA PENTA has the following components:
Fleece layers: Polypropylene microfibre; Functional films: Monolithic TEEE.

UN CPC code
No. 36330: Plates, sheets, film, foil and strip, of plastics, not self-adhesive, non-cellular and not reinforced, laminated, supported or similarly combined with other materials

Products covered by the EPD
SOLITEX FRONTA PENTA (width: 1.5 m / length: 50 m) GTIN 4026639163509
SOLITEX FRONTA PENTA (width: 3 m / length: 25 m) GTIN 4026639164353

This EPD relates to a single product – SOLITEX FRONTA PENTA – and covers multiple GTINs and product variants. While all variants are essentially the same product, they differ only in their dimensions or customised printing, such as customer logos. These variations meet specific customer requirements, but do not alter the inherent environmental characteristics of the product, thus justifying a common EPD.

Geographical Scope
Global

Applications
For use as a breather membrane (weather-resistive barrier, WRB) behind closed and open facades (open-jointed cladding up to a gap width of 50 mm (2") and 40% open total area). Installation onto boarding, wood-based panels and all mat or panel-shaped thermal insulation materials.

Properties
Extremely robust and UV-stable: UV ageing test carried out with 10,000 h instead of 5,000 h. Dry building components: pore-free TEEE functional film actively transports moisture to the outside. Well-protected building components: permeable, extremely high tear-resistance, windproof, rainproof and waterproof. Not visible behind open-jointed cladding: black fleece with printed marking only in the overlap area. 6 months of outdoor exposure.

Technical specifications

Property	Regulation	Value
Colour	N/A	Black
Surface weight	EN 1849-2	280 ±15 g/m² ; 0.92 ±0.5 oz/ft²
Thickness	EN 1849-2	1.1 mm ; 43 mils
Water vapour resistance factor μ	EN ISO 12572	185
s_d value	EN ISO 12572	0.2 m
g value	N/A	1.0 MN·s/g
Vapour permeance	ASTM E 96	16.1 perms
Fire class	EN 13501-1	E
Outdoor exposure	N/A	6 months
Watertight joints with 'connect' adhesive strips or TESCON VANA tape	EN 13859-1	W1
Water column	EN ISO 811	10 000 mm ; 32' 10"
Watertightness, non-aged/aged*	EN 13859-2	W1 / W1
Tensile strength MD/CD	EN 13859-2 (A)	480 N/5 cm / 340 N/5 cm ; 55 lb/in / 39 lb/in
Tensile strength MD/CD, aged*	EN 13859-2 (A)	360 N/5 cm / 260 N/5 cm ; 41 lb/in / 30 lb/in
Elongation MD/CD	EN 13859-2 (A)	60% / 70%
Elongation MD/CD, aged*	EN 13859-2 (A)	28% / 28%
Nail tear resistance MD/CD	EN 13859-2 (B)	300 N / 380 N ; 67 lbf / 85 lbf
*) Durability after artificial ageing with 10,000 h of UV ageing instead of 5,000 h	EN 1297 / EN 1296	Passed (for walls with open joints)
Flexibility at low temperature	EN 1109	-40 °C ; -40 °F
Temperature resistance	EN 1109, EN 1296, EN 1297	Permanent -40 °C to 100 °C ; -40 °F to 212 °F
Thermal conductivity	N/A	0.04 W/(m·K) ; 0.3 BTU·in/(h·ft²·°F)
CE labelling	EN 13859-2	Yes

LCA information

Declared unit: 1m² of SOLITEX FRONTA PENTA external windtightness membrane and accompanying packaging.
Conversion factor to mass: 0.313 kg/m²
Reference service life: 30 years
Time representativeness: Based on yearly manufacturing data from 01/01/2023 until 31/12/2023.

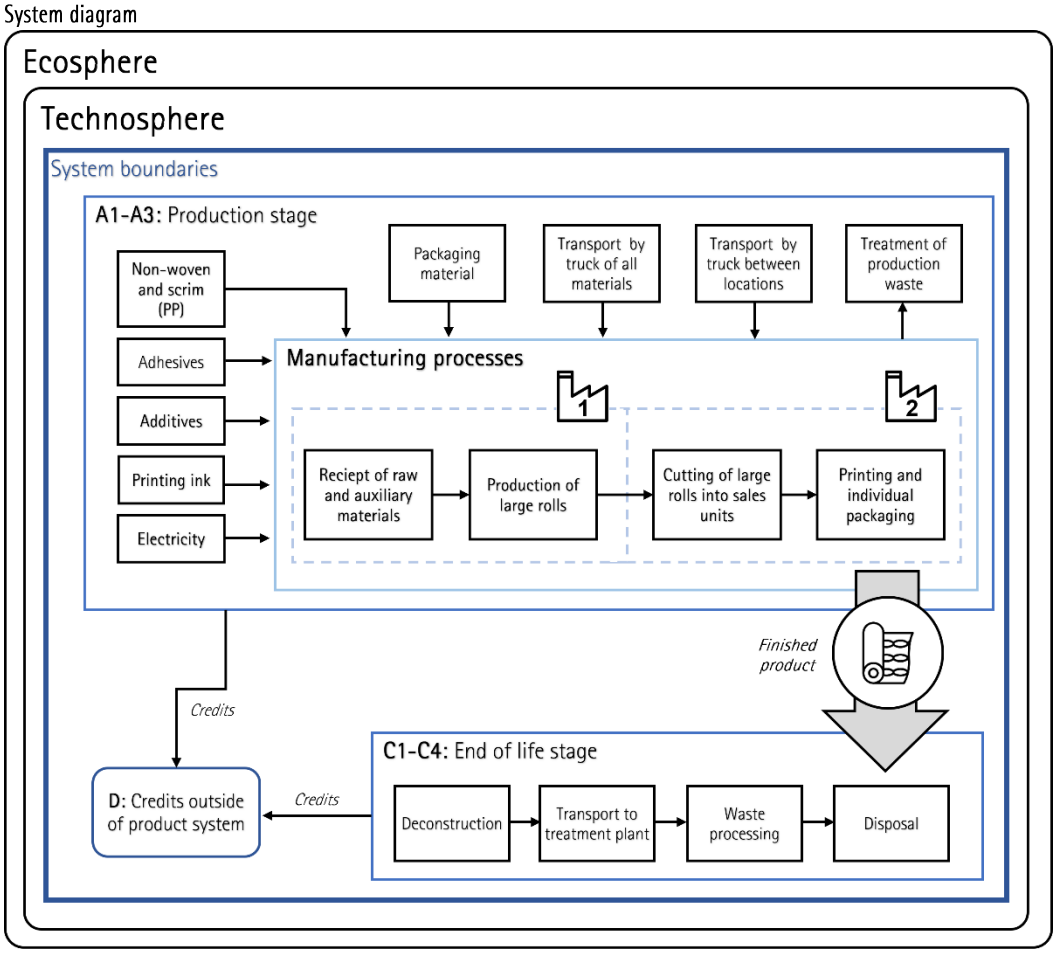
Description of the manufacturing processes
The SOLITEX FRONTA PENTA breather membrane (or weather-resistive barrier, WRB) for open-jointed cladding is produced by bonding and laminating three fleece layers with two functional film layers between them in an alternating arrangement to create large rolls. These rolls are printed and then cut into smaller rolls, which are the sales units. These rolls are then packaged and sent for storage and distribution, first to the central warehouse in Germany, and then all over the world for further sale.

Database and LCA software used
For the LCA model, the software system for holistic balancing (LCA for Experts) version 10.9 was used. Background data sets from the current version of the LCA for experts (GaBi) database service pack 2024.2 were used entirely.

Description of system boundaries
a) Cradle to gate with modules C1–C4 and module D (A1–A3 + C + D)

- As module A5 is not declared, the results of modules A1-A3 include the biogenic C of the product packaging and the balancing out of the biogenic carbon flows from module A5.
- Infrastructure and capital goods are excluded from the system boundaries.
- All processing steps and locations are balanced within the system boundaries.
- The LCI data manufacturing data was gathered for the specific declared product, and no co-product allocation was necessary.
- The allocation of waste follows the polluter-pays principle. The system boundary to the next product system is set when the waste reaches the end-of-waste state. The impacts of waste treatment from production are included in Module A3. The impacts of waste treatment during end-of-life are included in Module C, where the product reaches the end-of-waste status.
- All the LCI data used for modelling in Modules A2 and A3 corresponds to primary data collected from the manufacturing plant and contracted suppliers, including transportation distances from suppliers to production sites, transportation distances between production sites, material and energy inputs, and waste and emission outputs.

System diagram



Each processing step within the system boundaries is marked with an icon and number (#1, #2, etc.), indicating the specific production site where it occurs. The system boundaries cover the following modules:

A1. Raw Material Supply

- Extraction and processing of raw materials required for manufacturing the defined external windtightness membrane: Non-woven (PP), Additives and adhesives, Printing ink.
- Extraction and processing of raw materials required for packaging the 1 m² of finished product, external windtightness membrane: Film (PE), Film (PP), Cardboard, Pallet.
- Extraction and processing of raw materials of internal packaging, used for transportation between all production locations. Internal packaging includes: Film (PE), Cardboard and Pallet.
- Generation of electricity from primary energy resources to supply the production sites with energy.

A2. Transportation

- Transportation of the raw materials was modelled based on the providers specific locations and transportation via truck to the production location #1 in Germany. All materials are procured from providers within less than 800 km.
- After production, the large rolls are transported to the production location #2.
- The transportation of raw materials for packaging, as well as the transportation of the large rolls from the production location #1 to location #2 is modelled in Module A2.

A3. Manufacturing

- Manufacturing of the defined external windtightness membrane occurs in Germany.
- The production of the large membrane roll is done in the production location #1, by bonding and laminating the polymers and the non-woven.
- In location #2, the membrane is confectioned, by adding the adhesive and release film. The membrane is cut into sale units. The products are then packed on pallets for further transportation.
- Treatment of waste generated from the manufacturing processes is included in the model. The model includes processing up to the end-of-waste status or disposal of final residues including any packaging not leaving the factory gate. Resulting credits are assigned to module D.
- Electricity for production in module A3 is modelled with the German Residual electricity mix.

C1-C4. End of Life

- The external windtightness membrane is treated as waste in module C3 by means of incineration with energy recovery.
- Module C2 contains the environmental impact of transportation of the product to the waste treatment plant.
- Module C3 contains the necessary processes for waste treatment at the end of the product life cycle. The loads for waste treatment are mapped here until the end of the waste property is reached.
- Emissions are assigned to module C3. Resulting credits are assigned to module D.

D. Reuse, recovery, recycling potential

- This product has no considerable benefits due to reuse, but considerable benefits from material and energy recovery.
- The value flows resulting from the treatment of production waste in module A3 and C3, which can potentially serve as material or energy input for a downstream product system in the form of the energy recovered from the waste-to-energy treatment and material recovery, are accounted for completely in module D as credits outside of product system.

More information

- Additional information can be obtained by contacting pro clima at info@proclima.com
- LCA practitioner: brands & values GmbH, info@brandsandvalues.com

Electricity use in Module A3 accounts for less than 30% of the GWP-GHG results of modules A1-A3. The energy requirements for production in Module A3 were modelled using the Residual electricity mix of the electricity supplier on the market. In this case the LCA for Experts dataset of Residual grid mix; AC, technology mix; consumption mix, to consumer; <1kV in Germany from the reference year 2022. The climate impact of the dataset is 0.847 kg CO_2 eq./kWh (using the GWP-GHG indicator). A residual mix represents the production mix of a country corrected with generation attributes which are explicitly tracked. Residual mix is used to determine the energy origin of untracked consumption, i.e. consumption, which has not been disclosed with explicit tracking instruments such as Guarantees of Origin. The Residual grid mix in question includes the following energy sources: 1.8% from renewable sources, 18.17% from nuclear, 34.57% from lignite, 21.19% from coal, 20.88% from gas, 1.08% from oil and 2.32% from non-specific fossil sources according to the LCA for Experts dataset.

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

	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	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	DE	DE	DE										GLO	GLO	GLO	GLO	GLO
Specific data used	2%																
Variation – products	0%																
Variation – sites	0%																

Modules declared: (X = included; ND = not declared).

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Non-woven (PP)	0.240	0.0%	0 %- 0 kg C/kg
Additives and adhesives	0.047	0.0%	0 %- 0 kg C/kg
Printing ink	0.001	0.0%	0 %- 0 kg C/kg
Total product	0.288	0.0%	0 %- 0 kg C/kg
Packaging materials	**Weight, kg**	**Weight-% (relative to the product)**	**Weight biogenic carbon, [kg C/kg]**
Film (PE)	0.006	1.9%	0 kg C/kg
Cardboard	0.005	1.5%	0.002 kg C/kg
Pallet	0.014	4.6%	0.007 kg C/kg
Straps (PET)	0.000	0.0%	0 kg C/kg
Total packaging	0.025	8.0%	0.009 kg C/kg
TOTAL Product with packaging	**0.313**	**100%**	**0.009 kg C/kg**

The biogenic carbon content of product and packaging is 0.035 kg CO_2 eq. per declared unit.

Dangerous substances from the candidate list of SVHC for Authorisation	EC No.	CAS No.	Weight-% per functional or declared unit
None	Not applicable	Not applicable	Not applicable

Environmental information

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. According to the EN 15804 standard, the characterization factors of EU-JRC must be applied. The EN 15804 reference package based on EF 3.1. was used for the LCA calculations. The characterization factors are available at the following internet address: http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml

Disclaimer: The use of the results of modules A1-A3 (A1-A5 for services) without considering the results of module C is discouraged.

Potential environmental impact – mandatory indicators according to EN 15804

Results per functional or declared unit							
Indicator	Unit	Tot. A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO_2 eq.	8.49E-01	0.00E+00	2.34E-03	8.57E-01	0.00E+00	-3.80E-01
GWP-biogenic	kg CO_2 eq.	3.04E-03	0.00E+00	7.25E-06	3.37E-05	0.00E+00	-1.89E-03
GWP-luluc	kg CO_2 eq.	5.54E-04	0.00E+00	3.84E-05	4.02E-06	0.00E+00	-3.52E-05
GWP-total	kg CO_2 eq.	8.52E-01	0.00E+00	2.39E-03	8.57E-01	0.00E+00	-3.82E-01
ODP	kg CFC 11 eq.	7.44E-11	0.00E+00	3.36E-16	5.57E-14	0.00E+00	-3.50E-12
AP	mol H+ eq.	1.64E-03	0.00E+00	4.34E-06	8.80E-05	0.00E+00	-4.01E-04
EP-freshwater	kg P eq.	2.59E-06	0.00E+00	9.75E-09	1.25E-08	0.00E+00	-6.56E-07
EP-marine	kg N eq.	5.36E-04	0.00E+00	1.77E-06	1.98E-05	0.00E+00	-1.23E-04
EP-terrestrial	mol N eq.	5.76E-03	0.00E+00	2.05E-05	4.18E-04	0.00E+00	-1.32E-03
POCP	kg NMVOC eq.	2.05E-03	0.00E+00	4.24E-06	5.82E-05	0.00E+00	-3.46E-04
ADP-minerals&metals	kg Sb eq.	1.11E-07	0.00E+00	1.99E-10	5.73E-10	0.00E+00	-3.36E-08
ADP-fossil*	MJ	2.48E+01	0.00E+00	3.01E-02	1.18E-01	0.00E+00	-6.76E+00
WDP	m^3	1.18E-01	0.00E+00	3.54E-05	7.91E-02	0.00E+00	-4.08E-02
Acronyms	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						

* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

Potential environmental impact – additional mandatory and voluntary indicators

Results per functional or declared unit							
Indicator	Unit	Tot. A1-A3	C1	C2	C3	C4	D
GWP-GHG[1]	kg CO_2 eq.	8.49E-01	0.00E+00	2.38E-03	8.57E-01	0.00E+00	-3.80E-01
PM	Disease incidence	ND	ND	ND	ND	ND	ND
IR	kBq U235 eq.	ND	ND	ND	ND	ND	ND
ETP-fw	CTUe	ND	ND	ND	ND	ND	ND
HTP-c	CTUh	ND	ND	ND	ND	ND	ND
HTP-nc	CTUh	ND	ND	ND	ND	ND	ND
SQP	dimensionless	ND	ND	ND	ND	ND	ND
Acronyms	GWP-GHG = 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; PM = Particulate matter emissions; IR = Ionizing radiation, human health; ETP-fw = Eco-toxicity - freshwater; HTP-c = Human toxicity, cancer effect; HTP-nc = Human toxicity, non-cancer effects; SQP = Land use related impacts/Soil quality						

[1] 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.

Resource use indicators

Results per functional or declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
PERE	MJ	1.78E+00	0.00E+00	2.59E-03	3.39E-02	0.00E+00	-2.31E+00
PERM	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	1.78E+00	0.00E+00	2.59E-03	3.39E-02	0.00E+00	-2.31E+00
PENRE	MJ	1.36E+01	0.00E+00	3.01E-02	1.13E+01	0.00E+00	-6.76E+00
PENRM	MJ	1.11E+01	0.00E+00	0.00E+00	-1.11E+01	0.00E+00	0.00E+00
PENRT	MJ	2.48E+01	0.00E+00	3.01E-02	1.18E-01	0.00E+00	-6.76E+00
SM	kg	7.17E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.42E-04
RSF	MJ	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
FW	m^3	3.98E-03	0.00E+00	2.89E-06	1.85E-03	0.00E+00	-1.73E-03
Acronyms	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 re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water						

Waste indicators

Results per functional or declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	kg	3.60E-07	0.00E+00	1.15E-12	7.12E-11	0.00E+00	-4.70E-09
Non-hazardous waste disposed	kg	1.04E-02	0.00E+00	4.91E-06	7.79E-03	0.00E+00	-3.56E-03
Radioactive waste disposed	kg	3.43E-04	0.00E+00	5.48E-08	6.19E-06	0.00E+00	-4.98E-04

Output flow indicators

Results per functional or declared unit							
Indicator	Unit	A1-A3	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
Material for recycling	kg	3.11E-03	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
Exported energy, electricity	MJ	5.66E-02	0.00E+00	0.00E+00	1.75E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	1.29E-01	0.00E+00	0.00E+00	3.14E+00	0.00E+00	0.00E+00

Additional environmental information

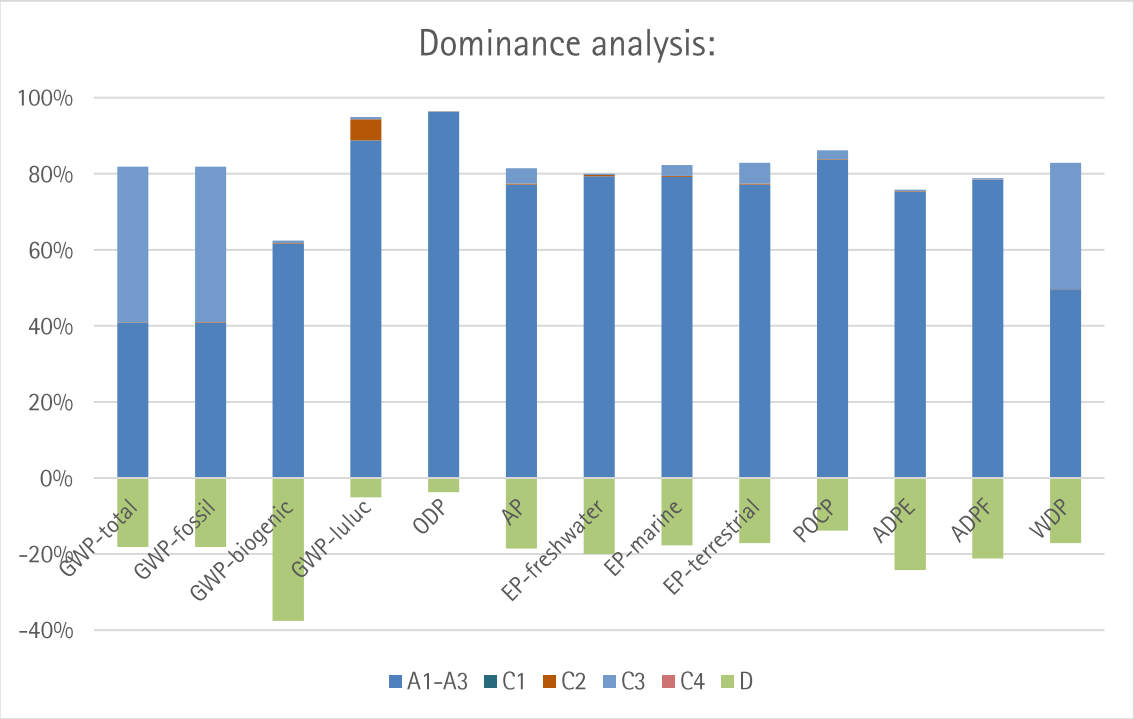
TRACI Indicators

The following TRACI indicators v 2.1 were calculated to comply with US Market requirements. The declared specific product complies with the ISO 21930:2017 Standard.

Results per functional or declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Eutrophication	kg N eq.	1.30E-04	0.00E+00	4.52E-07	4.69E-06	0.00E+00	-4.00E-05
Global Warming Potential, air, excl. biogenic CO2	kg CO_2 eq.	8.14E-01	0.00E+00	2.32E-03	8.57E-01	0.00E+00	-3.62E-01
Global Warming Potential, air, incl. biogenic CO2	kg CO_2 eq.	8.02E-01	0.00E+00	2.25E-03	8.57E-01	0.00E+00	-3.62E-01
Ozone Depletion, air	kg CFC 11 eq.	7.65E-11	0.00E+00	6.74E-18	1.11E-15	0.00E+00	-6.58E-14
Resources, Fossil Fuels	MJ surplus energy	3.31E+00	0.00E+00	4.31E-03	1.20E-02	0.00E+00	-6.74E-01
Smog Air	kg O_3 eq.	3.24E-02	0.00E+00	8.34E-05	1.17E-03	0.00E+00	-6.94E-03
Acidification	kg SO_2 eq.	1.50E-03	0.00E+00	3.88E-06	7.58E-05	0.00E+00	-4.07E-04
Ecotoxicity	CTUe	1.38E-01	0.00E+00	2.18E-04	1.83E-04	0.00E+00	-1.31E-03
Human Health Particulate Air	kg PM2.5 eq	1.01E-04	0.00E+00	1.56E-07	2.25E-06	0.00E+00	-1.87E-05
Human toxicity, cancer	CTUh	1.13E-09	0.00E+00	1.32E-12	8.38E-12	0.00E+00	-1.49E-10
Human toxicity, non-canc.	CTUh	7.52E-08	0.00E+00	2.12E-10	3.50E-10	0.00E+00	-5.03E-09

Interpretation

The following dominance analysis examines the individual impact categories and considers them in detail.



The environmental impacts were analysed using the example of global warming potential (GWP total) to identify the responsible sources along the life cycle. Modules A1-A3 (50%) and Module C3 (50%) share an equal participation in the GWP total and fossil impact categories.
The main source of GWP impact is the incineration of non-woven, followed by its production. The production of non-woven is the second source of environmental impact in all main categories, only surpassed in the GWP-fossil by the incineration of Polypropylene (PP).
Transportation of raw materials to and between the manufacturing sites (A2) and disposal transportation of the product in EoL (C2) are not very relevant in terms of GWP total.
The production of non-woven in Modules A1-A3 has the largest contribution to the impacts of all main indicators, except for GWP luluc and GWP fossil. The truck transport in Module A2 is the main contributor for GWP luluc and the incineration of polypropylene (non-woven) in Module C3 for GWP fossil.

The data quality of the relevant generic datasets used is classified as very good, good or satisfactory. Relevant data sets are defined as data sets that together account for at least 80% of the absolute impact of each core indicator included in the EPD across the declared modules with the exception of Module D.

The variation of the environmental impact indicator results for modules A to C between the included products is 0%

References

ASTM E96, Standard test methods for water vapor transmission of materials, 2017. https://dx.doi.org/10.1520/E0096-00E01

DIN EN 15804. (2019). Sustainability of construction works – Environmental product declarations – Core rules for product category of construction products. Deutsches Institut für Normung DIN. Retrieved from https://doi.org/10.31030/1736947

EN 1109:2013-07, Flexible sheets for waterproofing - Bitumen sheets for roof waterproofing - Determination of flexibility at low temperature, 2013. https://dx.doi.org/10.31030/2007324

EN 1296:2001-03, Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Method for artificial ageing by long term exposure to elevated temperature, 2001. https://dx.doi.org/10.31030/9115025

EN 1297:2004-12, Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Method of artificial ageing by long term exposure to the combination of UV radiation, elevated temperature and water, 2004. https://dx.doi.org/10.31030/9185565

EN 13501-1:2019-05, Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests, 2019. https://dx.doi.org/10.31030/2870379

EN 13859-1:2014-07, Flexible sheets for waterproofing - Definitions and characteristics of underlays - Part 1: Underlays for discontinuous roofing, 2014. https://dx.doi.org/10.31030/2143338

EN 13859-2:2014-07, Flexible sheets for waterproofing - Definitions and characteristics of underlays - Part 2: Underlays for walls, 2014. https://dx.doi.org/10.31030/2143340

EN 1849-2:2019-09, Flexible sheets for waterproofing - Determination of thickness and mass per unit area - Part 2: Plastics and rubber sheets for roof waterproofing, 2019. https://dx.doi.org/10.31030/3042454

EN ISO 12572:2017-05, Hygrothermal performance of building materials and products - Determination of water vapour transmission properties - Cup method (ISO 12572:2016), 2017. https://dx.doi.org/10.31030/2429972

EN ISO 811:2018-08, Textiles - Determination of resistance to water penetration - Hydrostatic pressure test (ISO 811:2018), 2018. https://dx.doi.org/10.31030/2807631

EPD International. (2021). General Programme Instructions of the International EPD® System. Version 4.0.

EPD International. (2024). PCR 2019:14 Construction products and construction services. Version 1.3.4.

Sphera Solutions GmbH. (2024). LCA for Experts 10.7: Software and Database for Life Cycle Engineering and the databases (service pack 2023.2). Sphera Solutions GmbH.

TRACI. Bare, J. C. (2012). Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI) Version 2.1 - User's Manual. Version 2: U.S. Environmental Protection Agency | US EPA.

Version history

Version 1, 2025-04-16

- Original Version of the EPD

Version 2, 2026-10-01

- Differences versus the previously published version: Correction to the section "Name and location of production site(s)".

pro clima / MOLL bauökologische Produkte GmbH

www.proclima.com

www.environdec.com

EPD-0021-16/04/2025