Environmental Product Declaration

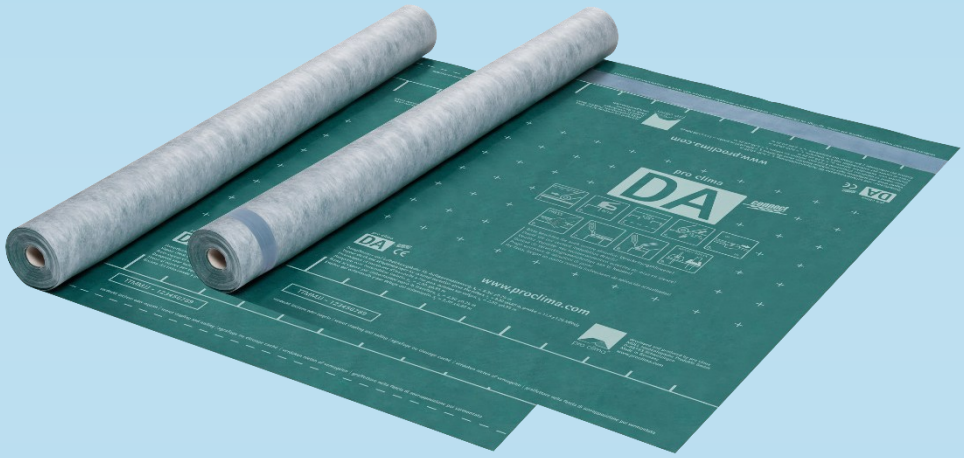
In accordance with ISO 14025:2006, EN 15804:2012+A2:2019/AC:2021 for

DA
DA connect

Vapour check membrane for external insulation and roof refurbishment, with self-adhesive strips

from

pro clima – MOLL bauökologische Produkte GmbH



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Valid until:	04/06/2030
EPD type:	EPD of multiple products, based on a representative 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): ,

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)
pro clima / MOLL bauökologische Produkte GmbH – Rheintalstr. 35-43 – 68723 Schwetzingen – Germany.

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

Product information

Product name
DA connect

Product identification
Vapour check membrane for external insulation and roof refurbishment, with self-adhesive strips

Product description
DA connect has the following components:
Protective and covering fleece: Polypropylene; Functional film: Polypropylene; Self-adhesive strips: Water-resistant SOLID adhesive.

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
DA (width: 1.5 m / length: 50.0 m) GTIN 4026639011947
DA connect (width: 1.5 m / length: 50.0 m) GTIN 4026639011336

This EPD relates to a single product – DA connect – 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, and in the inclusion of self-adhesive strips (DA connect) or the absence of these strips (DA). 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 vapour check membrane and airtight membrane directly on top of sheathing underneath suitable external roof insulation made of all insulation materials on structures that are open to diffusion on the exterior (roofing underlay with SOLITEX MENTO 3000, for example).
In addition, DA connect can be installed as an airtight membrane and refurbishment vapour check between two layers of insulation. All fibrous insulation materials can be used for insulation installed between rafters; the external roof insulation must be a foam insulation material (e.g. consisting of PUR, PIR or EPS). Please contact Technical Support at pro clima in Germany for assistance with calculating the thickness of the external foam insulation that is required from a building physics viewpoint. If necessary, the outer sealing layer should be implemented using a diffusion-open roofing underlay membrane (e.g. SOLITEX MENTO 3000).

Properties
Protects building structures against weathering during the construction phase for roof pitches of 10° (2.1:12) and higher. Water-resistant and waterproof, can be walked on. Acts as a vapour check and airtightness layer simultaneously. Excellent values in hazardous substance testing, has been tested according to the ISO 16000 evaluation scheme. Quick and reliable adhesion thanks to the integrated 'connect' self-adhesive strips on the long edges of the membrane.

Technical specifications

Property	Regulation	Value
Colour	N/A	Green
Surface weight	EN 1849-2	130 g/m² ±5 g/m²; 0.43 oz/ft² ±0.02 oz/ft² (*)
Thickness	EN 1849-2	0.45 mm ; 18 mils
Water vapour resistance factor μ	EN 1931	5 000
s_d value	EN 1931	2.30 m
g value	N/A	11.5 MN·s/g
Vapour permeance	ASTM E 96	1.4 perms
Fire class	EN 13501-1	E
Outdoor exposure	N/A	3 months
Outdoor exposure for refurbishment betw. 2 insulation layers	N/A	14 days ; 7 days at ≤10 °C (≤50 °F)
Watertight joints with 'connect' adhesive strips or TESCON VANA tape	EN 13859-1	W1
Watertightness to liquid water	EN 1928	W1
Water column	EN ISO 811	> 2 500 mm ; > 8' 2"
Airtightness	EN 12114	Tested
Tensile strength MD/CD	EN 12311-2	230 N/5 cm / 200 N/5 cm ; 26 lb/in / 23 lb/in
Elongation MD/CD	EN 12311-2	90% / 90%
Nail tear resistance MD/CD	EN 12310-1	120 N / 115 N ; 27 lbf / 26 lbf
Durability after artificial ageing	EN 1296 / EN 1931	Passed
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 13984	Yes

(*) The technical data specified here serves as a general guideline value, whereas the modelling calculations are based on exact annual production quantities and are therefore more precise. The same surface weight data is declared for the 'connect' membrane variants and for the standard membrane variants, as the weight of the 'connect' self-adhesive strips cannot be assigned per square metre of membrane surface in a universally correct manner. This creates an apparent discrepancy, but actually ensures that the technical data is more consistent.

LCA information

Declared unit: 1m² of DA connect vapour check membrane and accompanying packaging.
Conversion factor to mass: 0.167 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 DA connect vapour check membrane for external insulation and roof refurbishment, with self-adhesive strips is produced by bonding and laminating two fleece layers (front and back) and a functional film layer to create large rolls. These rolls are printed and then cut into smaller rolls, which are the sales units. Adhesive strips and release films are fitted to the long edges of the membranes to create the self-adhesive 'connect' strips (one on the printed front surface, one on the back surface). 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

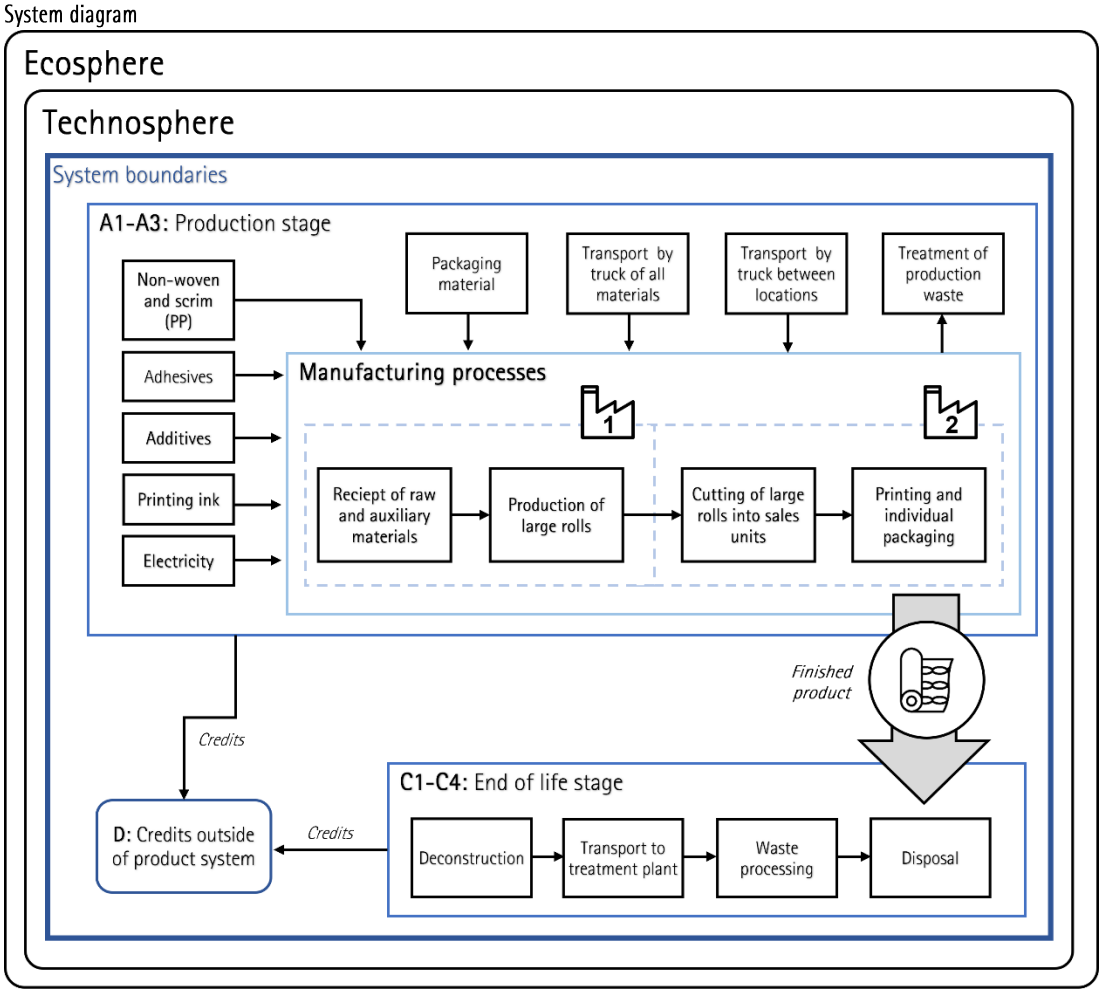
For the LCA model, the software system for holistic balancing (LCA for Experts) version 10.9 was used. Background data sets from the current version of the LCA for experts (GaBi) database service pack 2024.2 were used entirely.

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 in Modules A1-A3 corresponds to primary data collected from the manufacturing plant and contracted suppliers, including 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 airtightness and vapour check membrane: Non-woven (PP), film (PP), additives and printing ink.
- Extraction and processing of raw materials required for packaging the 1 m² of finished product, airtightness, and vapour check membrane: Cardboard, film (PE) and wood pallet.
- Extraction and processing of raw materials of internal packaging, used for transportation between all production locations. Internal packaging includes film (PE), cardboard and wood 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 500 km.
- After production, the large rolls are transported to the production location #2 for cutting of the large rolls into sales units, printing, individual packaging and labelling of the sales units. The sales units are then packed with film (PE) for transportation on pallets.
- The transportation of raw materials for packaging as well as the transportation of the large rolls from the production location #1 for finishing manufacturing in the production location #2 is modelled in Module A2.

A3. Manufacturing

- Manufacturing of the defined airtightness and vapour check membrane construction product 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. The rolls are cut into sale units, after printing and confection in the production location #2. 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 airtightness and vapour check membrane required for installation are 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 found by contacting pro clima at info@proclima.com
- LCA practitioner: brands & values GmbH, info@brandsandvalues.com

Electricity in A1-A3 accounts for less than 30% of the GWP-GHG results of modules A1-A3. The energy requirements for production 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	3%																
Variation – products	-6.7%*																
Variation – sites	0%																

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

*Measured in terms of GWP-fossil results. See interpretation.

Content information

Product components	Weight, kg	Post-consumer material, weight-%	Biogenic material, weight-% and kg C/kg
Non-woven (PP)	0.110	0.0%	0 %- 0 kg C/kg
Additives and adhesives	0.028	0.0%	0 %- 0 kg C/kg
Printing ink	0.002	0.0%	0 %- 0 kg C/kg
Total product	0.140	0.0%	0 %- 0 kg C/kg
Packaging materials	**Weight, kg**	**Weight-% (relative to the product)**	**Weight biogenic carbon, [kg C/kg]**
Film (PP)	0.003	2.0%	0 kg C/kg
Film (PE)	0.002	1.4%	0 kg C/kg
Cardboard	0.006	3.3%	0.002 kg C/kg
Pallet	0.017	10.0%	0.009 kg C/kg
Total packaging	0.028	16.7%	0.011 kg C/kg
TOTAL Product with packaging	**0.167**	**100%**	**0.011 kg C/kg**

The biogenic carbon content of product and packaging is 0.40 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.	4.56E-01	0.00E+00	1.15E-03	4.08E-01	0.00E+00	-1.96E-01
GWP-biogenic	kg CO_2 eq.	1.50E-03	0.00E+00	3.56E-06	1.57E-05	0.00E+00	-9.99E-04
GWP-luluc	kg CO_2 eq.	4.65E-04	0.00E+00	1.88E-05	1.02E-06	0.00E+00	-1.84E-05
GWP-total	kg CO_2 eq.	4.58E-01	0.00E+00	1.17E-03	4.08E-01	0.00E+00	-1.97E-01
ODP	kg CFC 11 eq.	2.03E-11	0.00E+00	1.65E-16	2.66E-14	0.00E+00	-1.83E-12
AP	mol H+ eq.	8.84E-04	0.00E+00	2.13E-06	4.45E-05	0.00E+00	-2.04E-04
EP-freshwater	kg P eq.	1.03E-06	0.00E+00	4.78E-09	5.86E-09	0.00E+00	-3.45E-07
EP-marine	kg N eq.	2.99E-04	0.00E+00	8.68E-07	9.72E-06	0.00E+00	-6.33E-05
EP-terrestrial	mol N eq.	3.24E-03	0.00E+00	1.00E-05	2.11E-04	0.00E+00	-6.78E-04
POCP	kg NMVOC eq.	1.06E-03	0.00E+00	2.08E-06	2.82E-05	0.00E+00	-1.78E-04
ADP-minerals&metals	kg Sb eq.	8.28E-08	0.00E+00	9.75E-11	2.61E-10	0.00E+00	-1.73E-08
ADP-fossil*	MJ	1.26E+01	0.00E+00	1.48E-02	5.22E-02	0.00E+00	-3.44E+00
WDP	m^3	6.02E-02	0.00E+00	1.73E-05	3.81E-02	0.00E+00	-1.94E-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.	4.57E-01	0.00E+00	1.17E-03	4.08E-01	0.00E+00	-1.96E-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	1.28E+00	0.00E+00	1.27E-03	1.56E-02	0.00E+00	-1.17E+00
PERM	MJ	1.42E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
PERT	MJ	1.28E+00	0.00E+00	1.27E-03	1.56E-02	0.00E+00	-1.17E+00
PENRE	MJ	7.16E+00	0.00E+00	1.48E-02	5.37E+00	0.00E+00	-3.44E+00
PENRM	MJ	5.45E+00	0.00E+00	0.00E+00	-5.31E+00	0.00E+00	0.00E+00
PENRT	MJ	1.26E+01	0.00E+00	1.48E-02	5.22E-02	0.00E+00	-3.44E+00
SM	kg	2.03E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.85E-03
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	1.97E-03	0.00E+00	1.42E-06	8.91E-04	0.00E+00	-8.44E-04
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

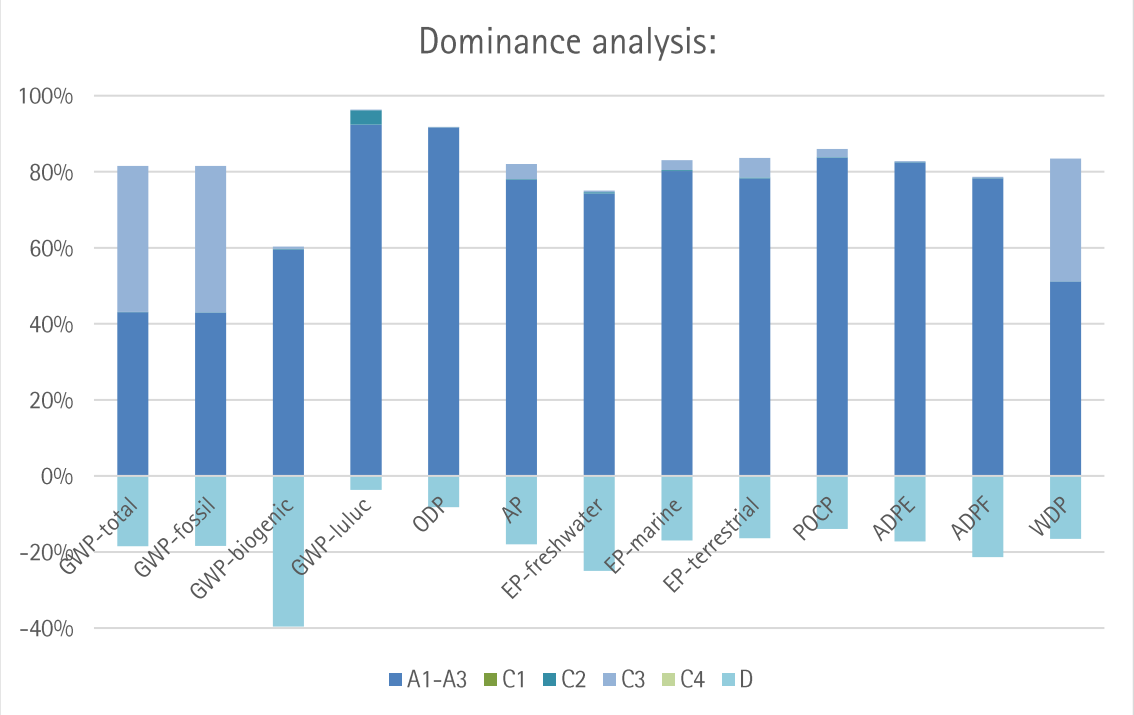
Results per functional or declared unit							
Indicator	Unit	A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	kg	8.90E-07	0.00E+00	5.65E-13	3.33E-11	0.00E+00	-2.41E-09
Non-hazardous waste disposed	kg	5.10E-03	0.00E+00	2.41E-06	1.94E-03	0.00E+00	-1.81E-03
Radioactive waste disposed	kg	1.80E-04	0.00E+00	2.69E-08	2.67E-06	0.00E+00	-2.43E-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	1.68E-02	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	7.62E-02	0.00E+00	0.00E+00	8.27E-01	0.00E+00	0.00E+00
Exported energy, thermal	MJ	1.76E-01	0.00E+00	0.00E+00	1.52E+00	0.00E+00	0.00E+00

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 (52.7%) has dominant influence followed by Module C3 (47%) on GWP total and fossil. The main source of GWP impact the incineration of polypropylene (non-woven waste), in module C3. The production of non-woven causes the highest environmental impact in all other impact categories, except for GWP luluc, GWP fossil and ODP.
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, GWP fossil and ODP. 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 use of additives for the production of the self-adhesive 'connect' strips has the highest share of ODP impacts.

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 except for Module D.

The variation of the environmental impact indicator results for modules A to C between the included products is depicted in the following table:

Highest variations between the declared product and the included products			
Indicator	**Unit**	**Min**	**Max**
GWP-total	%	-6.8%	0.0%
GWP-fossil	%	-6.7%	0.0%
GWP-biogenic	%	-9.9%	0.0%
GWP-luluc	%	-24.7%	0.0%
ODP	%	-82.9%	0.0%
AP	%	-9.3%	0.0%
EP-freshwater	%	-26.3%	0.0%
EP-marine	%	-10.8%	0.0%
EP-terrestrial	%	-10.1%	0.0%
POCP	%	-8.0%	0.0%
ADP-minerals & metals	%	-15.6%	0.0%
ADP-fossil1	%	-8.2%	0.0%
WDP	%	-3.9%	0.0%

The declared representative product is the 'connect' variant of the declared membrane. This version, which features self-adhesive strips on the long edges of the membranes, has a higher environmental impact than its non-connect equivalent due to the additional material and manufacturing processes involved.

Material Composition: The core material and manufacturing processes are similar across these products, with variations only in the addition of the 'connect' self-adhesive strips on the long edges of the membrane.

Manufacturing Process: The production processes for these membranes are largely consistent, involving similar raw materials and energy inputs. Therefore, the environmental impact per square metre is comparable across the range.

Functional Equivalence: All products fulfil the same fundamental function of providing an airtight membrane and refurbishment vapour check between two layers of insulation. The environmental impact associated with their production is closely related to their shared purpose and material characteristics.

The main sources of uncertainties are the use of one ecoinvent dataset and the absolute magnitude of some results. The results for ODP, for example, are in the E-11 range. At such small absolute magnitudes, even minor changes in input data can lead to large percentage variations, despite having minimal real-world significance.

Overall, the declared EPD remains a robust and conservative representation of the product group, as it declares the product with the highest environmental impacts but also accounts for methodological uncertainties and scale effects in select impact categories.

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