

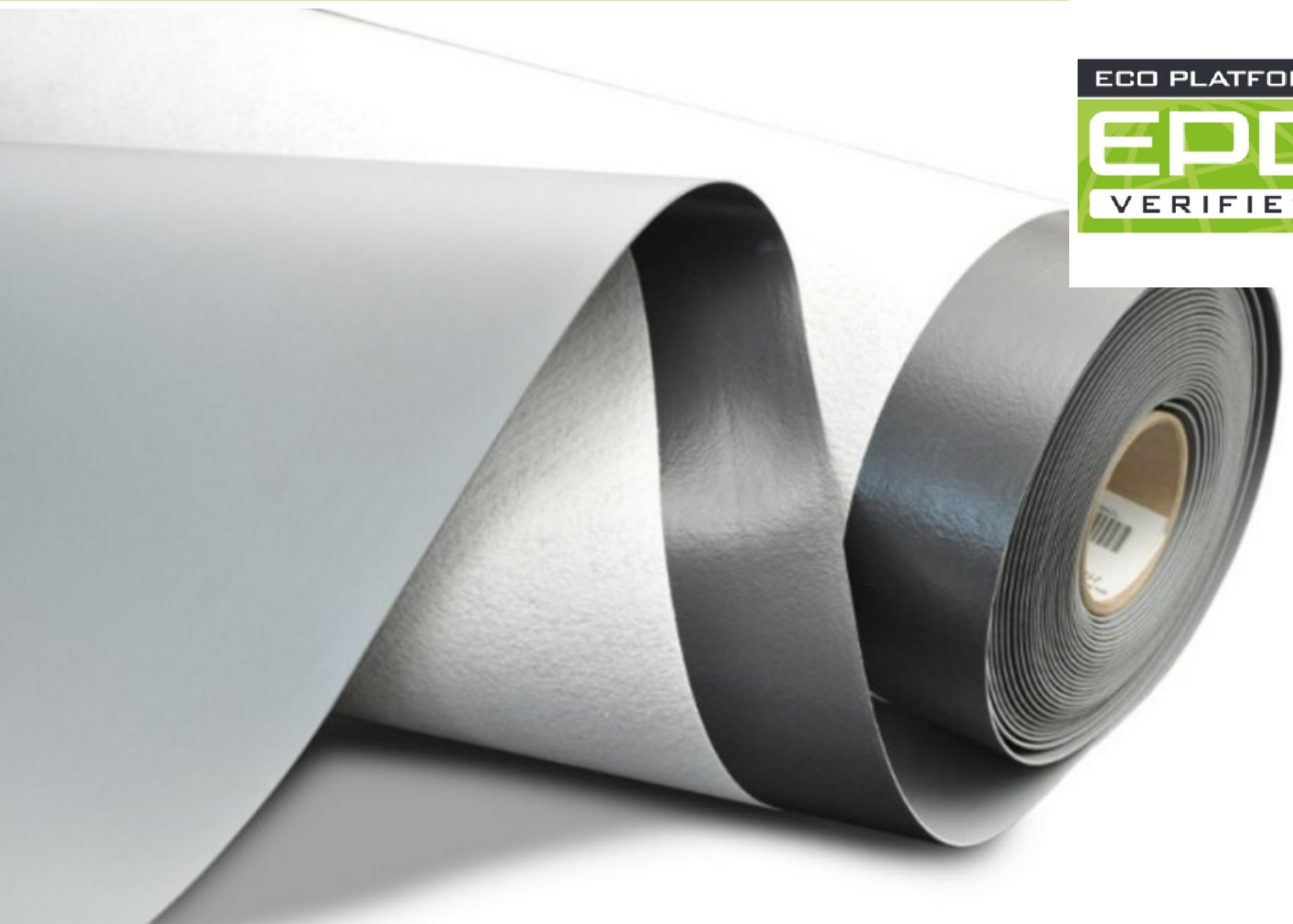
ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

Owner of the Declaration	BMI Group Holdings UK Ltd
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-BMI-20250695-IBA1-EN
Issue date	11.05.2026
Valid to	10.05.2031

Cosmofin / Monarplan
BMI Group

www.ibu-epd.com | <https://epd-online.com>



1. General Information

BMI Group

Programme holder

IBU – Institut Bauen und Umwelt e.V.
 Hegelplatz 1
 10117 Berlin
 Germany

Declaration number

EPD-BMI-20250695-IBA1-EN

This declaration is based on the product category rules:

Plastic and elastomer roofing and sealing sheet systems,
 01.08.2021
 (PCR checked and approved by the SVR)

Issue date

11.05.2026

Valid to

10.05.2031

Dipl.-Ing. Hans Peters
 (Chairman of Institut Bauen und Umwelt e.V.)

Dr. Martina Bender
 (Managing Director Institut Bauen und Umwelt e.V.)

Cosmofin / Monarplan

Owner of the declaration

BMI Group Holdings UK Ltd
 Thames Tower, Station Rd -
 - Reading RG1 1LX
 United Kingdom

Declared product / declared unit

1 m² plastic and elastomer roofing and sealing membrane system produced.

Scope:

This Declaration applies for Cosmofin FG, GG plus, GF and Monarplan FM, GF roofing and sealing membrane systems manufactured at the Štúrovo plant in Slovakia. The LCA results of Cosmofin GF / Monarplan GM with a thickness of 1.5 mm and a surface weight of 2.2 kg/m² (worst-case scenario) are declared.

The LCA is based on average production data from July 2024 to June 2025.

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

The EPD was created according to the specifications of EN 15804+A2. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard EN 15804 serves as the core PCR	
Independent verification of the declaration and data according to ISO 14025:2011	
<input type="checkbox"/>	internally
<input checked="" type="checkbox"/>	externally

Mr Stephen Forson ,
 (Independent verifier)

2. Product

2.1 Product description/Product definition

Cosmofin FG, GG plus, GF and Monarplan FM, GF are monomer, plasticized, bitumen-incompatible PVC-P synthetic roofing membrane systems with an internal layer and/or reinforcement. Seams are joined by hot air or solvent welding agent.

Designation according to DIN SPEC 20000-201: DE/E1 PVC-P-NB- V-GG-GV-1,5

(EU) Directive No. 305/2011 (CPR) applies for placing the product on the market in the EU/EFTA (with the exception of Switzerland). The product has a Declaration of Performance taking consideration of DIN EN 13956:2012, Flexible sheets for waterproofing - Plastic and rubber sheets for roof waterproofing, and CE marking.

Use is governed by the respective national regulations.

2.2 Application

Cosmofin/Monarplan are single-layer synthetic roofing membrane systems which are used as roof waterproofing for exposed and covered flat roofs. They are laid exposed, mechanically fastened or ballasted (gravel, paving, parking decks and greening).

2.3 Technical Data

Constructional data

Name	Value	Unit
Waterproof as per EN 1928	Passed	-
Artificial ageing as per EN 1297	Passed	-
Dimensional stability as per EN 1107-2	≤ 0.3	%
Folding in the cold as per EN 495-5	≤ -30	°C
Resistance to root penetration (for green roofs) as per EN 13948 (FLL)	Passed	-
Tensile strain as per EN 12311-2	≥ 30	%
Resistance to impact loads as per EN 12691 (Method A/B)	≥ 500	mm
Shear resistance of the seam joint as per EN 12317-2	≥ 600	N/50mm
Tear propagation resistance as per EN 12310-2	≥ 200	N

Product performance values in line with the Declaration of Performance in terms of its essential characteristics in accordance with DIN EN 13956

2.4 Delivery status

The products are stacked on pallets and the number of rolls per pallet and roll dimensions depend on the specific product and its thickness.

Further information and delivery status information can be found online at www.bmigroup.com/de.

2.5 Base materials/Ancillary materials

Cosmofin / Monarplan membranes comprise:

Name	Value	Unit
Polyvinylchloride	45-55	%
Plasticisers	30-40	%
Backing	5-15	%
Filler	4-8	%
Stabilisers	2-5	%
Pigments, Antioxidants and other Additives	0.05-3	%
Flame Retardant	0-0.02	%

This product contains substances listed in the Candidate List of Substances of Very High Concern for Authorisation (SVHC) exceeding 0.1 percentage by mass: No.

This product/article/at least one partial article contains other Carcinogenic, mutagenic, reprotoxic (CMR) substances in categories 1A or 1B which are not on the candidate list, exceeding 0.1 percentage by mass: No.

Biocide products were added to this construction product or it has been treated with biocide products (this then concerns a treated product as defined by the (EU) Ordinance on Biocide Products No. 528/2012): No.

2.6 Manufacture

BMI synthetic membranes are manufactured using an extrusion process. The production begins with the preparation of a dry blend of the selected polymers, performance-enhancing additives, and other optional ingredients in the required proportions. This mixture is extruded into granules, which constitute the main compound of the membrane.

From these granules, a film extrusion process is carried out to obtain the membrane. In certain product types, the compound is extruded onto the top and bottom of a scrim to create laminated layers. The membrane is then cooled by passing through a series of rollers before being wound into rolls or cut to size. Depending on the composition and intended application, additional steps may include applying a backing layer or incorporating further functional additives.

For packaging, cardboard cores, labels, and plastic films are used to ensure safe handling, storage, and transport.

2.7 Environment and health during manufacturing

The health and safety of production personnel are prioritised, indicating that working conditions are designed to mitigate risks associated with the manufacturing process. Waste gases generated during production are effectively managed through collection and filtration systems, such as exhaust gas scrubbers, which help to reduce air pollution and improve air quality in and around the facility. Furthermore, the production facility complies with all applicable regulatory standards regarding exhaust gases, wastewater, solid waste, and noise emissions. This is crucial for minimising environmental impact and ensuring the health and safety of the workers.

2.8 Product processing/Installation

Cosmofin / Monarplan are high-quality thermoplastic roofing membranes made from monomer-plasticised PVC and reinforced with a central glass fleece structure. This central reinforcement makes them highly suitable for installation under ballast. Some variants within the product family are also optimised for different installation methods like mechanically for

fastened structures or for strip bonding applications.

For loose laying, membranes are rolled out and the seams are hot-air welded. For mechanical fixing, the membranes are rolled out and fixed with fasteners, before the hot-air welding of the seams. An additional application method involves fixing the membranes using a specific adhesive. In this method, the membranes are rolled out and adhered to the substrate before the seams are hot-air welded.

2.9 Packaging

Cosmofin/Monarplan rolls are compactly palletized, secured and wrapped in PE foil, and dispatched in such state. All the included packaging material can be sorted and collected for recycling.

2.10 Condition of use

When installed properly and subjected to typical loads, Cosmofin/Monarplan roofing membranes maintain their integrity and fulfill their function throughout their service life, assuming professional installation and proper use and maintenance.

2.11 Environment and health during use

There are no adverse effect on the environment and health during the period of use.

2.12 Reference service life

The service life depends on climatic conditions, the thickness of the membrane, the colour and the application method. Based on durability studies for analogous products and field performance data, it is reasonable to expect a service life of up to 35 years assuming professional installation, proper use and maintenance. This value has not been declared according to ISO 15686.

2.13 Extraordinary effects

Fire

Cosmofin/Monarplan membranes are classified in Construction Product Class E, as defined by EN 13501-1.

Fire protection

Name	Value
Building material class	Class E
Burning droplets	-
Smoke gas development	-

3. LCA: Calculation rules

3.1 Declared Unit

The declared unit is 1 m² of Cosmofin / Monarplan GF roof membrane produced. The Declaration applies for a thickness of 1.5 mm and a surface weight of 2.2 kg/m².

Declared unit and mass reference

Name	Value	Unit
Declared unit	1	m ²
Grammage	2.2	kg/m ²
Layer thickness	0.0015	m

Within the monomeric range of membranes, certain products are marketed under different brand names (i.e. Cosmofin / Monarplan) depending on the specific region or commercial agreement. The GF variation is selected as the representative product for this EPD as it incorporates both a polyester fleece backing and other functional additives. This configuration represents the "worst-case" conservative model for the group. Variance analysis confirms that the maximum difference among all included compositions is 5.8%, ensuring that the

Water

The substances used in Cosmofin/Monarplan are not soluble in water, nor do they react with water.

Accordingly, there are no consequences for the environment even in the event of unforeseen contact with water.

Mechanical destruction

There are no known negative consequences for the environment in the event of unforeseen mechanical destruction of the membrane material.

2.14 Re-use phase

At the end of their service life, Cosmofin/Monarplan waterproofing sheets should be selectively removed in order to be recycled. This process is key to maintaining a closed-loop material cycle and maximising the recovery of material from used polymeric membranes.

2.15 Disposal

The preferred end-of-life approach for Cosmofin/Monarplan polymeric waterproofing membranes is recycling, with the objective of maintaining a closed-loop material system. This pathway involves the sheets being collected, cleaned, and processed through a shredding plant.

In line with the company's commitment to circularity, significant work is currently being done to establish the necessary recycling infrastructure and research the integration of recovered materials into new products. Considering these active initiatives and the membranes' long service life, recycling is assessed as the most appropriate disposal scenario.

As an alternative disposal option, energy recovery is considered.

The European Waste Catalogue designates the PVC Synthetic membranes under Waste Code 17 02 03.

2.16 Further information

Further information, such as installation guidelines, brochures, declarations of performance and others can be found online at www.bmigroup.com/de.

environmental indicators cover all technical variations within the validated scope.

3.2 System boundary

This EPD is based on the system boundary cradle to gate with options, modules C1-C4, and module D (A1-A3 + C + D and additional modules. The additional modules are A4 and A5).

The system boundaries of the EPD followed the modular structure set forth by EN 15804+A2.

The LCA takes into account the following modules:

- A1: Provision and Processing of raw materials (e.g. dry blends of polymeric compounds including pigments, processing aids, stabilisers, fillers, flame retardants, carrier materials and others) used for the production of the membrane and the intermediate products.
- A2: Transport of raw materials to the factory by truck.
- A3: Manufacture of roofing membranes in the factory (including energy supply, water supply and packaging)

materials such as wooden pallets, cardboard and PE film.)

- A4: Transport of the produced membrane to the building site.
- A5: Installation of the membrane into the building by means of hot-air welding (including welding energy), disposal or recycling of packaging.
- C1: Manual deconstruction and removal of the membrane with no environmental burdens (recovery).
- C2: Transport of the recovered membrane to waste-processing facility.
- C3: Processing of the recovered membrane for material recycling (Scenario 1 - C3/1) or energy recovery (Scenario 2 - C3/2).
- C4: Product waste disposal/landfilling. (No further environmental burdens since the waste treatment processes are fully allocated and accounted for within Module C3).
- D: Benefits for reuse, recovery and/or the recycling process of the membrane, and benefits from the avoided production of virgin material. (Scenario 1 - D/1) or benefits from the thermal treatment of the product waste and packaging material. (Scenario 2 - D/2).

3.3 Estimates and assumptions

At the end of life stage, Scenario 1 considers that 100% of material is recycled, while Scenario 2 considers 100% of the material going to energy recovery.

3.4 Cut-off criteria

All primary operational data was considered, including recipe constituents, energy consumption and water usage. Transport processes were also accounted for, covering all inputs and outputs associated with the product. The limit of 5% of negligible processes in terms of mass and energy input required in PCR Part A is complied with. Transport burdens for packaging were considered as well.

Machinery, systems, and infrastructure required for production were excluded from the system boundaries. Furthermore, corporate overheads represent a major category typically omitted from EPD calculations. This encompasses the entire administrative and human side of the business, such as the energy consumed by headquarters (including office lighting, heating, and cooling) as well as the environmental impact of business travel and daily employee commuting. These factors are considered "support functions" rather than direct physical

inputs to the product's manufacturing process, therefore, they are excluded to ensure the data remains focused purely on the material's industrial lifecycle.

3.5 Background data

The LCAfE software system developed by Sphera Solutions has been used to model the life cycle of the declared product. The underlying database is CUP 2025.1.

3.6 Data quality

The data used in this LCA study were collected by BMI Group GmbH. The data collection was based on annual consumptions from the production location in Štúrovo. All the collected data and data used for the creation of the LCA model are highly confidential.

The Sphera MLC background data was last revised in 2025. The quality of the data surveyed can be regarded as very good. The robustness of the LCA data can be valued as very good from the perspective of technological and geographical representativeness.

3.7 Period under review

The period of study is the year between July 2024 and June 2025.

3.8 Geographic Representativeness

Land or region, in which the declared product system is manufactured, used or handled at the end of the product's lifespan: Europe

3.9 Allocation

The BMI production site is located in Štúrovo, Slovakia. At this production site, BMI is manufacturing various products.

Accordingly, the energy consumption values were allocated to the specific products based on production quantities and their respective shares. Furthermore, production and recipe data were utilised to determine the raw material quantities.

3.10 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account. The underlying database used is CUP 2025.1.

4. LCA: Scenarios and additional technical information

Characteristic product properties of biogenic carbon

Only the product packaging contains biogenic carbon, not the actual product.

Information on describing the biogenic carbon content at factory gate

Name	Value	Unit
Biogenic carbon content in product	-	kg C
Biogenic carbon content in accompanying packaging	0.036	kg C

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

The following technical information serves as a basis for the declared modules or can be used for the development of specific scenarios in the context of a building assessment.

Transport to the building site (A4)

Name	Value	Unit
Transport distance	~900	km
Capacity utilisation (including empty runs)	80	%

Installation into the building (A5)

Stage A5, representing installation, was modelled assuming additional membrane consumption due to overlapping, and electricity consumption for hot-air welding, which has higher emissions compared to self adhesive membranes. This generalised scenario was used to cover the average case across all membranes. Both membrane overuse and electricity consumption figures were sourced from the company's own installation manuals, making the A5 stage, like A1-A3, based on accurate primary data.

Since in this stage the packaging is disposed of, its End of Life was also grouped as A5.

Name	Value	Unit
Electricity consumption	0.015	kWh
Overlaps (Membrane Seams)	5.6	%
Cardboard and Paper (Packaging)	0.04	kg/m ²
Plastic (Packaging)	0.01	kg/m ²
Plywood (Packaging)	0.04	kg/m ²

Electricity Mix

Name	Value	Unit
GWP (SK: Residual Grid Mix - Sphera)	0.237	kg CO ₂ eq/kWh

End of life (C1-C4)

For modeling the end-of-life stage, two different scenarios are calculated, each of which represents a 100 % scenario.

Name	Value	Unit
Recycling (Scenario 1)	100	%
Transport (Scenario 1)	100	km
Energy Recovery (Scenario 2)	100	%
Transport (Scenario 2)	50	km

Since the deconstruction and removal of the product requires only manual labor, no material nor environmental inputs/outputs have been considered in the module C1.

Reuse, recovery and/or recycling potentials (D), relevant scenario information.

Based on these EoL considerations, environmental credits are claimed in Module D for both recycling and energy recovery. The recycling scenario credits the avoided production of virgin material (secondary material recovery), while the incineration scenario credits the avoided production of conventional heat and electricity.

5. LCA: Results

The following tables show the results of the indicators concerning impact estimates, use of resources as well as the waste and other output flows with reference to 1m² roofing membrane produced.

The mentioned indicators are applying the characterization factors (EF. 3.1) prescribed by the JRC (Joint Research Center) of the European Commission. The impact assessment results are only relative statements that make no claims regarding the endpoints of the impact categories, the exceedance of threshold values, safety margins, or risks.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

Product stage			Construction process stage		Use stage							End of life stage				Benefits and loads beyond the system boundaries
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	MND	MNR	MNR	MNR	MND	MND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2:

Parameter	Unit	A1-A3	A4	A5	C1	C2/1	C2/2	C3/1	C3/2	C4	D/1	D/2
GWP-total	kg CO ₂ eq	5.16E+00	1.31E-01	3.96E-01	0	1.54E-02	8.12E-03	6.86E-01	4.58E+00	0	-3.43E+00	-1.37E+00
GWP-fossil	kg CO ₂ eq	5.2E+00	1.29E-01	3.31E-01	0	1.52E-02	8.02E-03	6.79E-01	4.58E+00	0	-3.4E+00	-1.36E+00
GWP-biogenic	kg CO ₂ eq	-4.07E-02	1.01E-03	6.46E-02	0	1.14E-04	5.79E-05	5.45E-03	6.76E-04	0	-2.06E-02	-6.19E-03
GWP-luluc	kg CO ₂ eq	3.42E-03	5.58E-04	1.91E-04	0	7.09E-05	3.99E-05	1.25E-03	7.5E-04	0	-2.99E-03	-1.78E-03
ODP	kg CFC11 eq	1.56E-10	6.16E-14	7.62E-12	0	6.99E-15	3.57E-15	1.76E-11	6.09E-12	0	-4.31E-11	-2.39E-11
AP	mol H ⁺ eq	1.06E-02	1.94E-04	6.11E-04	0	2.29E-05	1.21E-05	1.13E-03	1.16E-03	0	-5.47E-03	-1.78E-03
EP-freshwater	kg P eq	1.24E-05	3.31E-07	6.56E-07	0	3.91E-08	2.07E-08	5.26E-06	4.79E-07	0	-4.71E-06	-7.38E-07
EP-marine	kg N eq	2.5E-03	7.46E-05	1.41E-04	0	8.81E-06	4.66E-06	2.92E-04	3.77E-04	0	-1.67E-03	-5.21E-04
EP-terrestrial	mol N eq	2.78E-02	8.03E-04	1.57E-03	0	9.46E-05	5E-05	3.38E-03	4.98E-03	0	-1.92E-02	-5.99E-03
POCP	kg NMVOC eq	1.28E-02	1.75E-04	7.31E-04	0	2.06E-05	1.09E-05	7.06E-04	1.02E-03	0	-8.92E-03	-1.35E-03
ADPE	kg Sb eq	5.39E-07	9.45E-09	3.01E-08	0	1.11E-09	5.82E-10	1.79E-07	4.58E-08	0	-3.9E-07	-1.62E-07
ADPF	MJ	1.36E+02	1.7E+00	7.75E+00	0	2E-01	1.06E-01	8.93E+00	7.2E+00	0	-8.03E+01	-2.35E+01
WDP	m ³ world eq deprived	5.93E-01	5.3E-04	4.33E-02	0	6.28E-05	3.34E-05	1.05E-01	4.51E-01	0	-1.27E-01	-1.08E-01

GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2:

Parameter	Unit	A1-A3	A4	A5	C1	C2/1	C2/2	C3/1	C3/2	C4	D/1	D/2
PERE	MJ	8.26E+00	1.21E-01	5.06E+00	0	1.43E-02	7.57E-03	5.91E+00	1.82E+00	0	-1.19E+01	-8E+00
PERM	MJ	4.25E+00	0	-4.25E+00	0	0	0	0	0	0	0	0
PERT	MJ	1.25E+01	1.21E-01	8.09E-01	0	1.43E-02	7.57E-03	5.91E+00	1.82E+00	0	-1.19E+01	-8E+00
PENRE	MJ	8.75E+01	1.7E+00	8.53E+00	0	2E-01	1.06E-01	5.69E+01	5.52E+01	0	-8.03E+01	-2.35E+01
PENRM	MJ	4.87E+01	0	-7.73E-01	0	0	0	-4.79E+01	-4.79E+01	0	0	0
PENRT	MJ	1.36E+02	1.7E+00	7.75E+00	0	2E-01	1.06E-01	8.93E+00	7.2E+00	0	-8.03E+01	-2.35E+01
SM	kg	0	0	0	0	0	0	0	0	0	2E+00	4.4E-02
RSF	MJ	0	0	0	0	0	0	0	0	0	0	0
NRSF	MJ	0	0	0	0	0	0	0	0	0	0	0
FW	m ³	2.34E-02	3.79E-05	1.6E-03	0	4.62E-06	2.52E-06	4.33E-03	1.13E-02	0	-1.33E-02	-5.31E-03

PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA - WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2:

Parameter	Unit	A1-A3	A4	A5	C1	C2/1	C2/2	C3/1	C3/2	C4	D/1	D/2
HWD	kg	6.53E-04	7.87E-11	3.66E-05	0	9.19E-12	4.82E-12	2.83E-07	3.78E-09	0	-2.58E-08	-1.57E-08
NHWD	kg	1.72E-01	3.28E-04	7.16E-03	0	3.8E-05	1.98E-05	2.47E-01	2.07E+00	0	-3.55E-02	-1.21E-02

RWD	kg	2.38E-03	2.68E-06	1.66E-04	0	3.19E-07	1.7E-07	1.07E-03	1.23E-04	0	-1.1E-03	-1.57E-03
CRU	kg	0	0	0	0	0	0	0	0	0	0	0
MFR	kg	0	0	4.4E-02	0	0	0	2.33E+00	0	0	0	0
MER	kg	0	0	0	0	0	0	0	0	0	0	0
EEE	MJ	0	0	0	0	0	0	0	6.04E+00	0	1.37E-01	1.37E-01
EET	MJ	0	0	0	0	0	0	0	1.1E+01	0	2.46E-01	2.46E-01

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional:

Parameter	Unit	A1-A3	A4	A5	C1	C2/1	C2/2	C3/1	C3/2	C4	D/1	D/2
PM	Disease incidence	1.02E-07	1.88E-09	5.61E-09	0	2.2E-10	1.16E-10	9.49E-09	2.51E-08	0	-5.29E-08	-1.49E-08
IR	kBq U235 eq	4.69E-01	3.5E-04	3.03E-02	0	4.19E-05	2.24E-05	1.65E-01	1.41E-02	0	-1.4E-01	-2.24E-01
ETP-fw	CTUe	6.54E+01	1.47E+00	3.64E+00	0	1.77E-01	9.58E-02	2.32E+00	5.61E+00	0	-4.66E+01	-2.79E+00
HTP-c	CTUh	1.4E-09	2.9E-11	8.15E-11	0	3.42E-12	1.81E-12	1.39E-10	1.77E-10	0	-1.08E-09	-2.29E-10
HTP-nc	CTUh	2.99E-08	1.51E-09	1.62E-09	0	1.78E-10	9.46E-11	4.55E-09	1.45E-08	0	-2.1E-08	-5.52E-09
SQP	SQP	2.57E+01	4.57E-01	5.35E-01	0	5.57E-02	3.03E-02	3.3E+00	1.28E+00	0	-5.51E+00	-4.65E+00

PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index

Disclaimer 1 - for the indicator "Potential Human exposure efficiency relative to U235". This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure or radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, radon and from some construction materials is also not measured by this indicator.

Disclaimer 2 - for the indicators "abiotic depletion potential for non-fossil resources", "abiotic depletion potential for fossil resources", "water (user) deprivation potential, deprivation- weighted water consumption", "potential comparative toxic unit for ecosystems", "potential comparative toxic unit for humans – cancerogenic", "Potential comparative toxic unit for humans - not cancerogenic", "potential soil quality index". The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high as there is limited experience with the indicator.

This EPD was created using a software tool.

6. LCA: Interpretation

The data show that the impacts from module A1 dominate across most impact categories, indicating that raw materials are the main environmental hotspot for synthetic membranes. PVC and plasticisers represent over 70% of the total mass and are the main contributors among all materials to the environmental burdens, explaining the strong dominance of module A1 compared to all other stages in most categories. In comparison, the transport, manufacturing, and installation modules have only a minor influence on the overall results.

Scenario 2 (incineration) results in considerably higher CO₂ emissions in module C3, mainly due to combustion, while the

associated recovery credits are around 65% lower than in Scenario 1 (recycling). Differences are also observed across several other categories, such as water use, likely due to the higher process-water demand typical of waste-to-energy systems.

Overall, the environmental performance of these membranes is primarily determined by their raw material inputs. Ongoing efforts within the company and across the wider industry aim to increase polymer recycling rates and the proportion of recycled content, which is expected to lead to a further reduction of their overall environmental impact.

7. Requisite evidence

There is no requisite evidence required for the declared

product.

8. References

BNB 2011: BBSR-Tabelle 'Nutzungsdauern von Bauteilen zur Lebenszyklusanalyse nach BNB' (Reference service life table). Bewertungssystem Nachhaltiges Bauen (BNB), Bundesinstitut für Bau-, Stadt- und Raumforschung (BBSR).

EN 495-5: EN 495-5:2017. Flexible sheets for waterproofing - Determination of foldability at low temperature - Part 5: Plastic and rubber sheets for roof waterproofing.

CPR: Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products (Construction Products Regulation, EU-BauPVO).

EN 1107-2: EN 1107-2:2017. Flexible sheets for waterproofing - Determination of dimensional stability - Part 2: Plastic and rubber sheets for roof waterproofing.

EN 1297: EN 1297:2004. Flexible sheets for waterproofing -

Bitumen, plastic and rubber sheets for roof waterproofing - Method of artificial ageing by long term exposure to UV radiation, elevated temperature and water.

EN 1928: EN 1928:2018. Flexible sheets for waterproofing - Determination of watertightness.

EN 12310-2: EN 12310-2:2018. Flexible sheets for waterproofing - Determination of resistance to tearing (nail shank) - Part 2: Plastic and rubber sheets for roof waterproofing.

EN 12311-2: EN 12311-2:2010. Flexible sheets for waterproofing - Determination of tensile properties - Part 2: Plastic and rubber sheets for roof waterproofing.

EN 12317-2: EN 12317-2:2010. Flexible sheets for waterproofing - Determination of shear resistance of joints - Part 2: Plastic and rubber sheets for roof waterproofing.

EN 12691: EN 12691:2018. Flexible sheets for waterproofing - Plastic and rubber sheets for roof waterproofing - Determination of resistance to wind load.

EN 13501-1: EN 13501-1:2018. Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests.

EN 13948: EN 13948:2017. Flexible sheets for waterproofing - Determination of the resistance to root penetration of geosynthetic barriers for use in construction of green roofs.

EN 15804: EN 15804:2012+A2:2019. Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.

EN ISO 14025: EN ISO 14025:2022. Environmental labels and declarations - Type III environmental declarations - Principles and procedures.

EN ISO 14040: EN ISO 14040:2009. Environmental management - Life cycle assessment - Principles and framework.

EN ISO 14044: EN ISO 14044:2006. Environmental management - Life cycle assessment - Requirements and guidelines.

GHG Protocol: World Resource Institute (WRI) and World Business Council for Sustainable Development (WBCSD). Product Life Cycle Accounting and Reporting Standard - Revised edition, 2015. Available online at: <http://www.ghgprotocol.org/corporate-standard>

IBU PCR Part A: Product Category Rules for Building-Related Products and Services - Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report according to EN 15804+A2:2019, Version 1.4. Institut Bauen und Umwelt e.V. (IBU).

IBU PCR Part B: PCR Guidance-Texts for Building-Related Products and Services - Part B: Requirements on the EPD for Plastic and elastomer roofing and sealing sheet systems. Institut Bauen und Umwelt e.V. (IBU).

**Publisher**

Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com

**Programme holder**

Institut Bauen und Umwelt e.V.
Hegelplatz 1
10117 Berlin
Germany

+49 (0)30 3087748- 0
info@ibu-epd.com
www.ibu-epd.com

**Author of the Life Cycle Assessment**

BMI Group Holdings UK Ltd
Thames Tower, Station Rd -
- Reading RG1 1LX
United Kingdom

+49 6104 937-312
admintc@bmgigroup.com
www.bmgigroup.com

**Owner of the Declaration**

BMI Group Holdings UK Ltd
Thames Tower, Station Rd -
- Reading RG1 1LX
United Kingdom

+49 6104 937-312
admintc@bmgigroup.com
www.bmgigroup.com