

Environmental Product Declaration



In accordance with ISO 14025 and EN 15804 for:

Built-in bitumen membranes

from

BMI Group Sverige







EPD® System, www.environdec.com

Programme operator:	EPD International AB
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EPD Profile

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Product category rules (PCR): The International EPD System PCR for Construction Products and CPC 54 Construction Services 2012:01, version 2.31.

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

☐ EPD process certification ☒ EPD verification

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 from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.

Company information

Description of the organisation

BMI Sweden, with 165 years of experience, is the Swedish market leading producer of roofs and waterproofing systems, and other barrier systems that serve as an outer protection for buildings. With our expertise, we are dedicated to help with design, project solutions and technical advisory for both private homes and commercial buildings. We offer innovative roofing and waterproofing systems designed to transform the way people live and work. Our headquarters are located in Malmö, with production sites also in Borås, Örnköldsvik and Grythyttan. We are certified according to ISO 9001 and ISO 14001. BMI Sweden is part of BMI Group, Europe's largest manufacturer of roofing and waterproofing solutions, with significant presence also in Asia and Africa. BMI Group offers some of the most acknowledged and entrusted brands in the industry, such as Monier, Icopal and Siplast.

For more information regarding the products or the organisation, see EPD owner's website: www.icopal.se.

Name and location of production site

The built in bitumen membranes are produced at BMI Sweden's production site in Malmö, Sweden. Address: BMI Group Sverige, Lodgatan 10, 211 24 Malmö, Sweden.

EPD Product information

Product name: This EPD covers the products Icopal Membrane 3, Icopal Membrane 4, Icopal Membrane 5 and Icopal Membrane 5 Bro.

Product identification:

Built in bitumen membranes for waterproofing are defined in the product standard EN 13707 *Flexible sheets for waterproofing*. **UN CPC code:** 5453 Roofing and waterproofing services

Table 1. Product identification data for the five products included in this EPD.

	Membrane 3	Membrane 4	Membrane 5	Membrane 5 Bro
Product identification code	YEP4000	YEP5200	YEP6500	YEP6500

Product description:

Icopal Membranes are a 1-layer membrane based on SBS-modified bitumen, made to be built-in in buildings in order to protect the underlying construction from moisture and chemical substances. Example of applications where Icopal Membranes are mounted include terraces, courtyards and parking-decks. Built-in membranes often have to withstand tough conditions such as traffic congestion, movements in the ground and large temperature variations. Icopal Membranes are adapted to Scandinavian conditions. The four membranes included in this study are designed to be used in different applications: Membrane 3 as an extra reinforcement under other waterproofing systems or as a temporary waterproofing system, Membrane 4 for waterproofing of indoor joists and smaller terrace joists, Membrane 5 for larger joists and parking decks and Membrane 5 Bro for parking decks and bridges. Membrane 5 Bro complies with the Swedish Transport Administration's requirements for waterproofing systems in bridges.

LCA information

Declared unit: 1 m² of Icopal Membranes built in bitumen membrane ready for customer delivery.

Reference service life: Not applicable.

Time representativeness: The specific data collected regarding manufacturing, packaging, suppliers and transports refer to the production year 2018. The data collection was performed by the EPD owner.

Data sources and LCA software used:

LCA software: SimaPro 9.0.0

Database: Ecoinvent 3.5. All background data used from generic datasets is less than 10 years old.

Additional data sources: LCI Bitumen (Eurobitume, 2019), supplier specific data from EPDs and specific data collected from BMI Sweden and their suppliers (2018).

Description of system boundaries:

Cradle-to-gate, i.e. life cycle stages A1-A3.

Excluded lifecycle stages: Since this is a cradle-to-gate EPD, life cycle stages A4, B1-B7, C1-C4 and D are neither considered nor declared.

Geographical scope: All inventories (module A1-A3) are modelled with respect to their specific origin. The scope of this EPD does not cover the use phase or end-of-life-phase, thus no geographical scope is accounted for in this EPD.

Allocation methodology: The cut-off method has been applied within the product system. For allocations between product systems, the Polluter-pays allocation method has been used.

Cut-off: All raw materials according to the product formula, including their respective energy demands during extraction and production have been considered, as well as the main packaging materials used to prepare the final product for distribution to customer. Some packaging materials & production solvents that constitute less than 1% of the product weight have been excluded. This cut-off rule does not apply for hazardous material and substances.

Additional information:

For further information regarding the underlying LCA, contact LCA practitioner Annika Löwgren: annika.lowgren@dge.se

System diagram

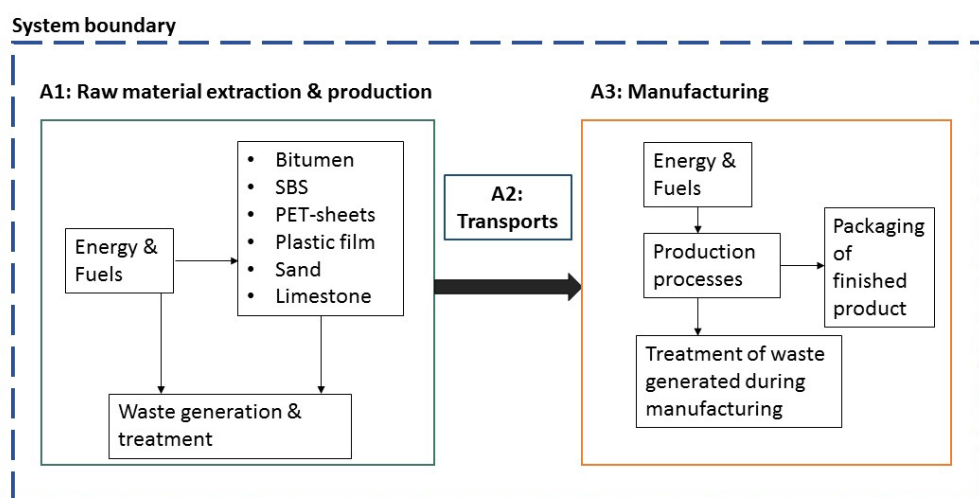


Figure 2. Flow diagram of the assessed life cycle phases of Icopal Membranes, beginning with raw material extraction and production, followed by transport from suppliers to Malmö and manufacturing at BMI Sweden's production site. The nomenclature A1-A3 refers to the standard stated by EN 15804. A further description of the life cycle phases included in the assessment is provided in Table 3.

Table 2. Table declaring the life cycle stages included in the LCA. X= included in the LCA, MND= Module Not Declared.

Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage
Raw materials	Transport	Manufacturing	Transport	Construction-Installation	Use stage	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction	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	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND	MND

Description of life cycle stages A1-A3: Raw material extraction and supply, transport and manufacture

Table 3. A detailed description of the life cycle stages included in this LCA.

Stage	Description
A1 Raw materials	The extraction, processing and refining of all raw materials (see table 4) used in the production of Icopal Membranes occurring upstream from the manufacturing site are included in this section. This also includes the energy generation needed for these processes (extraction, refining and transport of energy from primary energy sources). Recycling processes of secondary materials from a previous product system that are used in these manufacturing processes are also included, however processes that are part of the waste processing in the previous product system are excluded, referring to the Polluter-pays principle.
A2 Transport	The external transportation of raw materials to the manufacturing site. The modelling includes transportation on road and water, covering the transport of each raw material to the manufacturing site in Malmö.
A3 Manufacturing	<p>The manufacturing takes place at BMI Sweden's production site in Malmö, Sweden. Bitumen is mixed with SBS and limestone and stored in big holding tanks before being pumped to the production line. The PET-sheet is running through the production line and is applied with different layers of bitumen blends, sand, and lastly polypropylene foil is applied on the backside of the product. For both heating and cooling needed during production, coolants and hot oil are used in closed systems and is thus not consumed during the manufacturing process. The finished product is rolled, packed on pallets and supported with additional packaging before sent to customers.</p> <p>The manufacturing process includes the energy- and fuel consumption and emissions on site, production of all packaging materials and treatment of waste generated in the manufacturing process.</p>

Content declaration per declared unit

Icopal Membranes

Raw material	Weight % interval per m ²
PET sheet with glass threads	3-5%
SBS	4-9%
Bitumen	43-60%
Limestone	22-32%
Sand	4-19%
PP foil	<1%

Table 4. Content declaration of the four products covered in this EPD; Membrane 3, Membrane 4, Membrane 5 and Membrane 5 Bro.

For construction product EPDs compliant with EN 15804, the content declaration shall list substances contained in the products that are listed in the “Candidate List of Substances of Very High Concern for Authorization” when their content exceeds the limits for registration with the European Chemicals Agency: i.e. >0.1 % of the weight of the product. **No such substances are used in the production of the products covered in this EPD.**

Recycled material

Provenience of recycled materials (pre-consumer or post-consumer) in the product: The bitumen blend used in all four products covered by this EPD has a recycled content of 15% recycled bitumen. The glass fibre reinforced PET-sheets are made of 100% recycled polyester made from post-consumer recycled PET-bottles.

Environmental performance

1 m² Icopal Membranes

Environmental impact

IMPACT CATEGORY	UNIT	Membrane 3	Membrane 4	Membrane 5	Membrane 5 Bro
Acidification potential (AP)	kg SO ₂ eq.	8,42E-03	1,03E-02	1,34E-02	1,70E-02
Eutrophication potential (EP)	kg PO ₄ ³⁻ eq.	2,83E-03	3,46E-03	4,49E-03	5,80E-03
Global warming potential (GWP100a)	kg CO ₂ eq.	2,01E+00	2,39E+00	3,04E+00	3,85E+00
Formation potential of tropospheric ozone (POCP)	kg C ₂ H ₄ eq.	2,71E-03	3,52E-03	4,69E-03	7,09E-03
Abiotic depletion potential – Elements	kg Sb eq.	2,01E-06	2,47E-06	3,15E-06	3,89E-06
Abiotic depletion potential – Fossil resources	MJ, net calorific value	1,01E+02	1,29E+02	1,71E+02	2,20E+02
Depletion potential of the stratospheric ozone layer (ODP)	kg CFC 11 eq.	1,61E-07	1,88E-07	2,29E-07	2,70E-07

Table 5. The results from the LCA showing the environmental impacts during module A1-A3 (cradle-to-gate) for each product of the Icopal Membranes product range included in this EPD.

1 m² Icopal Membranes

Use of resources

PARAMETER		UNIT	Membrane 3	Membrane 4	Membrane 5	Membrane 5 Bro
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	6,2	6,3	6,5	6,8
	Used as raw materials	MJ, net calorific value	11,4	11,4	14,0	15,0
	TOTAL	MJ, net calorific value	17,6	17,7	20,5	21,8
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	26	30	37	45
	Used as raw materials	MJ, net calorific value	79	104	139	181
	TOTAL	MJ, net calorific value	105	134	176	226
Secondary material		kg	0,40	0,48	0,64	0,78
Renewable secondary fuels		MJ, net calorific value	-	-	-	-
Non-renewable secondary fuels		MJ, net calorific value	-	-	-	-
Net use of fresh water		m ³	7,62E-03	9,05E-03	1,11E-02	1,30E-02

Table 6. The results from the LCA showing the resource consumption during module A1-A3 (cradle-to-gate) for each product of the Icopal Membranes product range included in this EPD.



Waste production and output flows

1 m² Icopal Membranes

Waste production

IMPACT CATEGORY	UNIT	Membrane 3	Membrane 4	Membrane 5	Membrane 5 Bro
Hazardous waste disposed	kg	1,03E-02	1,04E-02	1,19E-02	1,28E-02
Non-hazardous waste disposed	kg	8,89E-02	8,91E-02	1,14E-01	1,24E-01
Radioactive waste disposed	kg	3,58E-04	3,58E-04	3,58E-04	3,58E-04

Table 7. The results from the LCA showing the waste generation during module A1-A3 (cradle-to-gate) for each product of the Icopal Membranes product range included in this EPD.

Output flows

IMPACT CATEGORY	UNIT	Membrane 3	Membrane 4	Membrane 5	Membrane 5 Bro
Components for reuse	kg	0	0	0	0
Materials for recycling	kg	4,09E-01	4,09E-01	4,09E-01	4,09E-01
Materials for energy recovery	kg	4,61E-02	4,61E-02	4,61E-02	4,61E-02
Energy recovery	MJ	0	0	0	0

Table 8. The results from the LCA showing the output flows during module A1-A3 (cradle-to-gate) for each product of the Icopal Membranes product range included in this EPD.

References

General Programme Instructions of the International EPD® System. Version 3.0.

The International EPD System PCR 2012:01. Construction Products and Construction Services. Version 2.31

EN 15804:2012+A1:2013 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

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