

Environmental Product Declaration



THE INTERNATIONAL EPD® SYSTEM



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

Polar Underlay Torchon 10x1 m

from

BMI Finland Oy



| | |
|--------------------------|---|
| Programme: | The International EPD® System, www.environdec.com |
| Programme operator: | EPD International AB |
| EPD registration number: | S-P-13276 |
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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 |

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|---|
| Accountabilities for PCR, LCA and independent, third-party verification |
| Product Category Rules (PCR) |
| CEN standard EN 15804 serves as the Core Product Category Rules (PCR) |
| Product level PCR standard: prEN 17388-1:2023 Programme operator horizontal PCR: PCR 2019:14 Construction products (EN 15804+A2:2019 core PCR) (1.3.2) |
| PCR review was conducted by: The Technical Committee of the International EPD® System |
| Life Cycle Assessment (LCA) |
| LCA accountability: Lars Åhsberg, BMI Group, Sweden |
| LCA/EPD Tool: R<THINK by Nibe, The Netherlands |
| Third-party verification |
| Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: X EPD verification by individual verifier Third-party verifier: Vladimír Kočí Approved by: The International EPD® System |
| Procedure for follow-up of data during EPD validity involves third party verifier: <input type="checkbox"/> Yes X 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



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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:

BMI Finland Oy
Läntinen Teollisuuskatu 10 , FI-2920 Espoo
myyntipalvelu@bmigroup.com
<https://www.bmigroup.com/fi/>

Lars Åhsberg, Nordic Environmental Manager, BMI Group, Sweden
+46 (0)70 604 50 46, lars.ahsberg@bmigroup.com

Description of the organisation:

BMI Finland Oy with 80 years of experience is one of the leading suppliers of roofing and waterproofing solutions in Finland. The company offers a wide range of roofing and waterproofing products, including Icopal bitumen membranes and Ormax tile roofs. Additionally, BMI Finland includes waterproofing professional Icopal Roof Ltd, which complements the company's services in roofing contracts and maintenance. BMI Finland's headquarters and Icopal's bitumen membrane factory are located in Espoo, at Juvanmalmi. BMI Finland employs approximately 300 people.

BMI Finland is part of the BMI Group, which is Europe's largest roofing manufacturer. BMI Group has united some of the most trusted local brands in the industry to become Europe's largest supplier of pitched and flat roofing solutions, offering customers over 280 years of experience and innovation. BMI Group, headquartered in the United Kingdom under Standard Industries, benefits from the global support, reach, and resources of the parent company. With over 120 production sites across Europe, Africa, and Asia and over 9,600 employees worldwide, BMI Group is well positioned to provide unparalleled service to homeowners, designers, contractors, property owners, and developers. from us.

Product-related or management system-related certifications:

BMI Finland's operations are certified in accordance with ISO 9001:2015.

Name and location of production site:

The declared product is produced at BMI Finland Oy, production site in Espoo, Finland.
Address: Läntinen Teollisuuskatu 10, FI-2920 Espoo

For more information regarding the product or the organisation, see EPD owner's website:
<https://www.bmigroup.com/fi/>

Product information

Product name:

Polar Underlay Torchon 10x1 m

Product identification:

Two-layer waterproofing systems are defined in the product standard EN 13707 Flexible sheets for waterproofing.

| | |
|------------------|---------------------|
| BMI item number: | 10008163 |
| Weight: | 4 kg/m ² |
| Thickness: | 3.2 mm |
| Width: | 1 000 mm |
| Length: | 10 000 mm |

Product description:

The declared product is used as an under layer in a two-layer waterproofing system from BMI, marketed under the brand Icopal, made for roofs with particularly high demands on the waterproofing layer.

The system consists of an upper layer (Top) and an under layer (Underlay), both based on SBS-modified bitumen. SBS increases the elasticity of the waterproofing layer and provides increased joint strength and service life. Two separate waterproofing layers provide a good protection against leakage. The under layer can also be used as a temporary seal while the rest of the roof is completed.

Two-layer waterproofing systems are defined in the product standard EN 13707 Flexible sheets for waterproofing.

The layers are either welded or glued with liquid bitumen into the substrate. In this EPD it has been assumed that the product is fully welded.

The declared product is expected to fulfil it's function for 50 years.

UN CPC code:

5453 Roofing and waterproofing services.

Geographical scope:

All inventories are modelled with respect to their specific origin when applicable. The installation scenario is modelled for Finland.



LCA information

Functional unit / declared unit:

1 m² installed under layer of bitumen roof waterproofing, produced by BMI Espoo.

The weight per 1 m² is 4.299 kg and the conversion factor to 1 kg is 0.2326 m².

Reference service life:

50 years.

Time representativeness and data quality:

The specific data collected regarding manufacturing, packaging, suppliers and transports refer to the production year 2022. The data collection was performed by the EPD owner.

Background data is based on EPD's and Ecoinvent 3.6. Foreground data is <2 years and background data <10 years. The data quality is considered to be good.

Database(s) and LCA software used:

LCA method R<THiNK: EN15804+A2:2019
 Characterization method: EN 15804 +A2 Method v1.0
 LCA database profiles: Ecoinvent version 3.6

Description of system boundaries:

Cradle to gate with options, modules C1–C4, module D and with optional modules (A1 - A3 + C + D and additional modules). Modules B4-B7 are not declared in this EPD.

Allocation used:

| Environmental profile / dataset used | Explanation of used allocation method |
|--|---|
| Bitumen production final LCI - EUROBITUME 2021 System, with infrastructures [Eurobitume] | The allocation between bitumen and other co-products made from crude oil is based on mass balances at the crude oil extraction and the transport stages. At the refining level, the allocation is based on relative economic values. Source = Eurobitume. |
| Bitumen production final LCI - EUROBITUME 2021 System, with infrastructures [Eurobitume] | The allocation between bitumen and other co-products made from crude oil is based on mass balances at the crude oil extraction and the transport stages. At the refining level, the allocation is based on relative economic values. Source = Eurobitume. |

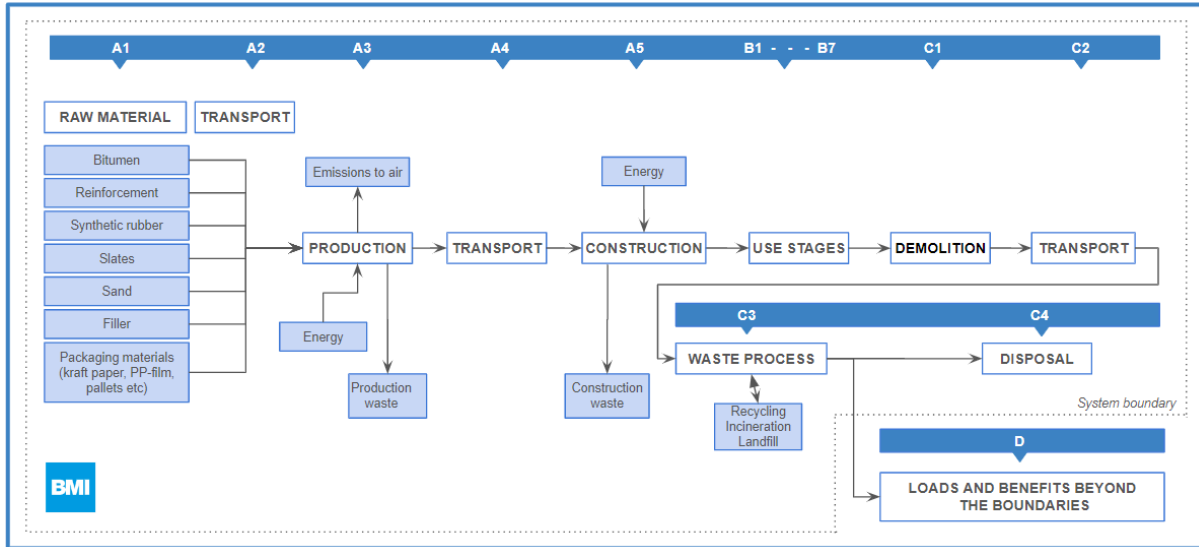
Cut-off Criteria:

- **Product Stage (A1-A3):**
All input flows (e.g. raw materials, transportation, energy use, packaging, etc.) and output flows (e.g. production waste) are considered in this LCA.
- **Construction process stage (A4-A5)**
All input flows (e.g. transportation to the construction site, additional raw material use for construction, installation energy (use)of energy use for assembly , etc.) and output flows (e.g. construction waste, packaging waste, etc.) are considered in this LCA. The total neglected input flows do therefore not exceed the limit of 5% of energy use and mass.
- **Use stage (B1-B3)**
All (known) input flows (e.g. raw materials, transportation, energy use, packaging, etc.) and output flows (e.g. emissions to soil, air and water, construction waste, packaging waste, end-of-life waste, etc.) related to the building fabric are considered in this LCA. The total neglected input flows do therefore not exceed the limit of 5% of energy use and mass.
- **End of life stage (C1-C4)**
All input flows (e.g. energy use for demolition or disassembly, transport to waste processing, etc.) and output flows (e.g. end-of-life waste processing of the product, etc.) are considered in this LCA. The total neglected input flows do therefore not exceed the limit of 5% of energy use and mass.
- **Benefits and Loads beyond the system boundary (D)**
All benefits and loads beyond the system boundary resulting from reusable products, recyclable materials and/or useful energy carriers leaving the product system are considered in this LCA.

Additional information:

For further information regarding the underlying LCA, contact LCA practitioner Lars Åhsberg: lars.ahsberg@bmigroup.comdgc.se.

System diagram:



This is a Cradle to gate with options, modules C1-C4 and module D LCA. The life cycle stages included are as shown below (X = module included, ND = module not declared).



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

| | 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 | X | X | X | X | X | ND | ND | ND | ND | X | X | X | X | X | |
| Geography | FI | | | FI | | FI | | | | | | | FI | | | | FI | |
| Specific data used | >60% | | | N/A | | | | | | | | | | | | | | N/A |
| Variation – products | 0% | | | | | N/A | | | | | | | | | | | | N/A |
| Variation – sites | 0% | | | | | N/A | | | | | | | | | | | | N/A |

Content information

Raw material and packaging materials

| Product components | Weight -% | Post-consumer material, weight-% | Biogenic material, weight-% |
|----------------------|------------|----------------------------------|---------------------------------|
| SBS modified bitumen | 52 | 2 | 0 |
| Limestone | 22 | 0 | 0 |
| Reinforcement | 4.5 | 100 | 0 |
| Sand | 21 | 0 | 0 |
| PP-foil | 0.2 | 0 | 0 |
| Packaging materials | Weight, kg | Weight-% (versus the product) | Weight biogenic carbon, kg C/kg |
| Kraft paper | 0.02 | 0.4 | 1 |
| Plastic (LDPE) | <0.01 | 0.2 | 0 |
| Wood pallet | 0.07 | 1.8 | 1 |

Origin of electricity

The used electricity during the manufacturing (phase A3) has the following origin: Fossil 54%, Renewable sources 29% and Nuclear 17%. The CO₂ emission factor is 364 g CO₂/kWh.

Dangerous substances from the candidate list of SVHC for Authorisation

For construction product EPDs compliant with EN15804, 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.



Results of the environmental performance indicators

Mandatory impact category indicators according to EN 15804

| Results per functional or declared unit | | | | | | | | | | | | |
|---|---|-----------|----------|----------|----|----|----|----|----------|-----------|----------|-----------|
| Indicator | Unit | A1-A3 | A4 | A5 | B1 | B2 | B3 | C1 | C2 | C3 | C4 | D |
| GWP-fossil | kg CO ₂ eq. | 2.34E+00 | 2.09E-01 | 3.54E-01 | 0 | 0 | 0 | 0 | 1.02E-01 | 4.75E+00 | 2.58E-01 | -1.51E+00 |
| GWP-biogenic | kg CO ₂ eq. | -2.18E-01 | 1.13E-04 | 2.25E-01 | 0 | 0 | 0 | 0 | 5.03E-05 | -1.30E-04 | 1.63E-04 | -1.11E-03 |
| GWP-luluc | kg CO ₂ eq. | 2.73E-03 | 7.46E-05 | 4.69E-05 | 0 | 0 | 0 | 0 | 4.38E-05 | 1.78E-04 | 9.37E-06 | -1.65E-04 |
| GWP-total | kg CO ₂ eq. | 2.12E+00 | 2.10E-01 | 5.78E-01 | 0 | 0 | 0 | 0 | 1.02E-01 | 4.75E+00 | 2.58E-01 | -1.51E+00 |
| ODP | kg CFC 11 eq. | 3.23E-07 | 4.76E-08 | 6.88E-08 | 0 | 0 | 0 | 0 | 2.25E-08 | 3.55E-08 | 5.68E-09 | -1.92E-07 |
| AP | mol H ⁺ eq. | 1.30E-02 | 6.02E-04 | 1.11E-03 | 0 | 0 | 0 | 0 | 4.08E-04 | 1.88E-03 | 2.77E-04 | -2.47E-03 |
| EP-freshwater | kg P eq. | 7.65E-05 | 1.67E-06 | 1.98E-06 | 0 | 0 | 0 | 0 | 9.28E-07 | 5.79E-06 | 3.65E-07 | -4.05E-06 |
| EP-marine | kg N eq. | 2.94E-03 | 1.19E-04 | 2.85E-04 | 0 | 0 | 0 | 0 | 1.17E-04 | 5.85E-04 | 2.20E-04 | -6.95E-04 |
| EP-terrestrial | mol N eq. | 3.30E-02 | 1.33E-03 | 3.13E-03 | 0 | 0 | 0 | 0 | 1.29E-03 | 6.45E-03 | 5.93E-04 | -7.88E-03 |
| POCP | kg NMVOC eq. | 1.16E-02 | 5.10E-04 | 1.07E-03 | 0 | 0 | 0 | 0 | 3.97E-04 | 1.83E-03 | 2.32E-04 | -2.49E-03 |
| ADP-mins&metals* | kg Sb eq. | 2.49E-04 | 5.78E-06 | 2.01E-06 | 0 | 0 | 0 | 0 | 3.65E-06 | 3.64E-06 | 1.98E-07 | -1.22E-06 |
| ADP-fossil* | MJ | 1.37E+02 | 3.17E+00 | 5.10E+00 | 0 | 0 | 0 | 0 | 1.51E+00 | 2.99E+00 | 4.38E-01 | -5.25E+01 |
| WDP* | m ³ | 9.45E-01 | 8.96E-03 | 1.43E-02 | 0 | 0 | 0 | 0 | 4.64E-03 | 7.64E-02 | 1.85E-02 | -1.23E-01 |
| 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.



Additional mandatory and voluntary impact category indicators

| Results per functional or declared unit | | | | | | | | | | | | |
|---|------------------------|----------|----------|----------|----|----|----|----|----------|----------|----------|-----------|
| Indicator | Unit | A1-A3 | A4 | A5 | B1 | B2 | B3 | C1 | C2 | C3 | C4 | D |
| GWP-GHG ¹ | kg CO ₂ eq. | 2.12E+00 | 2.10E-01 | 5.78E-01 | 0 | 0 | 0 | 0 | 1.02E-01 | 4.75E+00 | 2.58E-01 | -1.51E+00 |
| Particulate matter emissions (PM) | Disease incidence | 1.16E-07 | 1.33E-08 | 1.24E-08 | 0 | 0 | 0 | 0 | 6.20E-09 | 2.05E-08 | 3.08E-09 | -9.88E-09 |
| Ionizing radiation, human health (IRP) | kBq U235 eq. | 8.28E-01 | 1.38E-02 | 2.23E-02 | 0 | 0 | 0 | 0 | 6.62E-03 | 9.53E-03 | 1.77E-03 | -2.06E-01 |
| Eco-toxicity - freshwater (ETP-fw) | CTUe | 6.10E+01 | 2.55E+00 | 3.35E+00 | 0 | 0 | 0 | 0 | 1.28E+00 | 4.08E+00 | 5.86E-01 | -1.16E+01 |
| Human toxicity, cancer effect (HTP-c) | CTUh | 1.46E-09 | 7.10E-11 | 1.43E-10 | 0 | 0 | 0 | 0 | 3.98E-11 | 8.78E-10 | 1.23E-11 | -1.95E-10 |
| Human toxicity, non-cancer effects (HTP-nc) | CTUh | 2.73E-08 | 2.69E-09 | 3.64E-09 | 0 | 0 | 0 | 0 | 1.35E-09 | 6.95E-09 | 2.51E-10 | -3.24E-09 |
| Land use related impacts/Soil quality (SQP) | dimension less | 5.31E+01 | 2.21E+00 | 9.19E-01 | 0 | 0 | 0 | 0 | 9.00E-01 | 2.31E+00 | 1.02E+00 | -1.27E+01 |

¹ 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.



Resource use indicators

| Results per functional or declared unit | | | | | | | | | | | | |
|---|--|----------|----------|----------|----|----|----|----|----------|----------|----------|-----------|
| Indicator | Unit | A1-A3 | A4 | A5 | B1 | B2 | B3 | C1 | C2 | C3 | C4 | D |
| PERE | MJ | 5.48E+00 | 4.53E-02 | 5.82E-02 | 0 | 0 | 0 | 0 | 2.57E-02 | 1.65E-01 | 9.22E-03 | -1.64E+00 |
| PERM | MJ | 1.63E+00 | 0 | 8.16E-03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| PERT | MJ | 7.11E+00 | 4.53E-02 | 6.64E-02 | 0 | 0 | 0 | 0 | 2.57E-02 | 1.65E-01 | 9.22E-03 | -1.64E+00 |
| PENRE | MJ | 7.24E+01 | 3.36E+00 | 5.05E+00 | 0 | 0 | 0 | 0 | 1.61E+00 | 3.18E+00 | 4.65E-01 | -3.74E+01 |
| PENRM | MJ | 7.35E+01 | 0 | 3.70E-01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1.94E+01 |
| PENRT | MJ | 1.46E+02 | 3.36E+00 | 5.42E+00 | 0 | 0 | 0 | 0 | 1.61E+00 | 3.18E+00 | 4.65E-01 | -5.68E+01 |
| SM | kg | 1.83E-02 | 0 | 9.13E-05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 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 | 3.00E-02 | 3.39E-04 | 5.22E-04 | 0 | 0 | 0 | 0 | 1.80E-04 | 3.01E-03 | 4.57E-04 | -2.07E-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 | A4 | A5 | B1 | B2 | B3 | C1 | C2 | C3 | C4 | D |
| Hazardous waste disposed | kg | 6.80E-05 | 8.30E-06 | 9.19E-06 | 0 | 0 | 0 | 0 | 4.07E-06 | 5.00E-06 | 6.60E-07 | -3.60E-05 |
| Non-hazardous waste disposed | kg | 4.97E-01 | 1.54E-01 | 3.26E-02 | 0 | 0 | 0 | 0 | 5.97E-02 | 2.25E-01 | 1.72E+00 | -1.85E-02 |
| Radioactive waste disposed | kg | 1.23E-03 | 2.16E-05 | 3.54E-05 | 0 | 0 | 0 | 0 | 1.02E-05 | 1.15E-05 | 2.63E-06 | -3.37E-04 |

Output flow indicators

| Results per functional or declared unit | | | | | | | | | | | | |
|---|------|----------|----|----------|----|----|----|----|----|----------|----|----------|
| Indicator | Unit | A1-A3 | A4 | A5 | B1 | B2 | B3 | C1 | C2 | C3 | C4 | D |
| Components for re-use | kg | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Material for recycling | kg | 1.79E-02 | 0 | 3.77E-02 | 0 | 0 | 0 | 0 | 0 | 6.45E-01 | 0 | 0 |
| Materials for energy recovery | kg | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exported energy, electricity | MJ | 1.61E-01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6.07E+00 |
| Exported energy, thermal | MJ | 2.77E-01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.05E+01 |

References

- General Programme Instructions of the International EPD® System. Version 4.0.
- PCR 2019:14 Construction products (EN 15804+A2:2019 core PCR) (1.3.2)
- EN 15804+A2 EN 15804+A2: 2019: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products
- prEN 17388-1:2023 - Flexible sheets for waterproofing - Environmental product declaration - Product Category Rules for reinforced bitumen, plastic and rubber flexible sheets for (roof) waterproofing
- ISO 14040 ISO 14040:2006-10, Environmental management - Life cycle assessment - Principles and framework;
- EN ISO 14040:2006 ISO 14044 ISO 14044:2006-10, Environmental management - Life cycle assessment - Requirements and guidelines;
- EN ISO 14040:2006 ISO 14025 ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures
- Åhsberg, L (2024). Life Cycle Assessment – LCA background report Polar Underlay Torchon 10x1m, BMI Finland Oy

