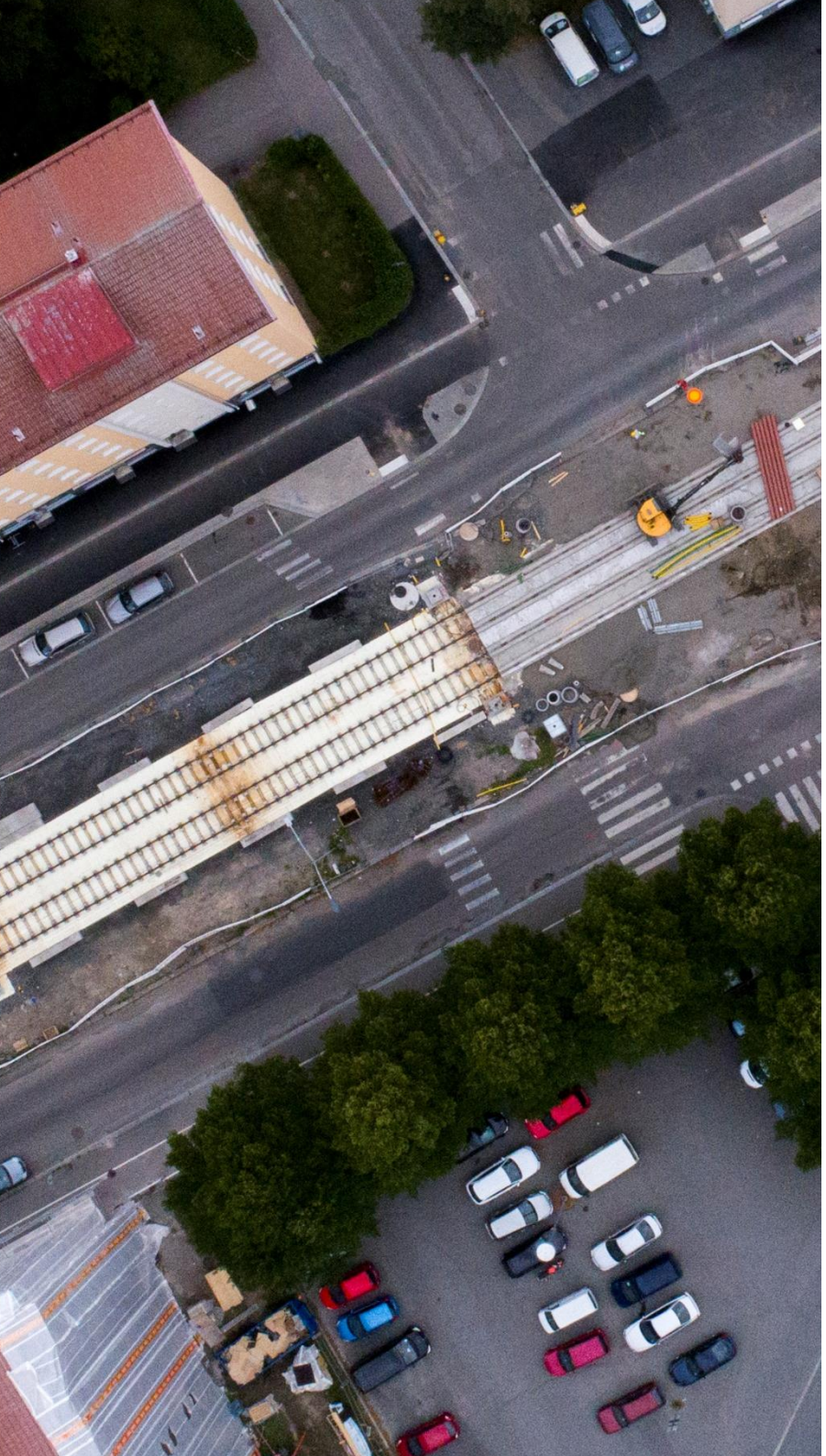


# ENVIRONMENTAL PRODUCT DECLARATION

## IN ACCORDANCE WITH EN 15804+A2 & ISO 14025

Manufactured by Finnfoam Oy


**EPD HUB, EPD number HUB-7096**

Published on 31.07.2026, last updated on 31.07.2026, valid until 30.07.2031

Life Cycle Assessment study has been performed in accordance with the requirements of EN 15804, EPD Hub PCR version 1.2 (24 March 2025) and JRC characterization factors EF 3.1.

Created with One Click LCA

# GENERAL INFORMATION

## MANUFACTURER

| | |
|---|---|
| Manufacturer | Finnfoam Oy |
| Address | Satamakatu 5, 24100, Salo, Finland |
| Contact details | finnfoam@finnfoam.fi |
| Website | www.finnfoam.fi |

## EPD STANDARDS, SCOPE AND VERIFICATION

| | |
|---|---|
| Program operator | EPD Hub, hub@epdhub.com |
| Reference standard | EN 15804+A2:2019 and ISO 14025 |
| PCR | EPD Hub Core PCR Version 1.2, 24 March 2025<br>c-PCR: EN 16783:2017 Thermal insulation products |
| Sector | Construction product |
| Category of EPD | Third party verified EPD |
| Parent EPD number | - |
| Scope of the EPD | Cradle to gate with options, A4-A5, and modules C1-C4, D |
| EPD author | Elisa Lindqvist, FF-FUTURE Oy |
| EPD verification | Independent verification of this EPD and data, according to ISO 14025:<br>☐ Internal verification ☑ External verification |
| EPD verifier | D.V as an authorized verifier for EPD Hub |

This EPD is intended for business-to-business and/or business-to-consumer communication. The manufacturer 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 and if they are not compared in a building context.

## PRODUCT

| | |
|---|---|
| Product name | Finnfoam XPS |
| Additional labels | F-300, F-400, F-400 URA, F-500, F-700, VR, CW-300, FL-K600, FI-K600, HU |
| Product reference | 1 $m^2$ of Finnfoam XPS 300 insulation material with thickness of 35 mm corresponding to RD-value=1$m^2$K/W |
| Places(s) of raw material origin | Europe |
| Place of production | Salo, Finland |
| Place of installation and use | Europe |
| Period for data | 1.1.-31.12.2025 |
| Averaging in EPD | No averaging |
| Variation in GWP-fossil for A1-A3 (%) | N/A |
| A1-A3 Specific data (%) | 14,9 |

## ENVIRONMENTAL DATA SUMMARY

| | |
|---|---|
| **Declared unit** | 1 $m^2$ of Finnfoam XPS 300 insulation material with thickness of 35 mm corresponding to RD-value=1$m^2$K/W |
| **Declared unit mass (kg)** | 1,12 |
| **Mass of packaging (kg)** | 0,009 |
| **GWP-fossil, A1-A3 ($kgCO_2e$)** | 2,78 |
| **GWP-total, A1-A3 ($kgCO_2e$)** | 2,78 |
| **Secondary material, inputs (%)** | 0,04 |
| **Total energy use, A1-A3 (kWh)** | 17,4 |
| **Net freshwater use, A1-A3 ($m^3$)** | 0,4 |

# PRODUCT AND MANUFACTURER

## ABOUT THE MANUFACTURER

Over forty years long history, Finnfoam has become one of the leading manufacturers of plastic-based thermal insulation solutions. The roots of Finnfoam's thermal insulation competence are embedded into the frozen Finnish soil. Today, the group is known for quality, product development, and reliability. Finnfoam's product range includes XPS, EPS and PIR thermal insulation and the Tulppa® -wet room boards. The entire Finnfoam (XPS) thermal insulation product range is suitable for use as frost insulation and for insulating floors, ceilings, and walls, as well as for various types of supplementary thermal insulation. As frost and floor insulation, Finnfoam (XPS) is highly resistant to moisture, freezing, and load. FF-EPS is best suited for use as thermal insulation for walls and ceilings, where it provides a safe and highly cost-effective solution. It can also be used on floors that are not subjected to significant loads. The applications of FF-PIR polyurethane insulation products include the thermal insulation of walls and ceilings as well as saunas. FF-PIR insulation products have a very high thermal insulation capacity, which allows for lower structural thickness.

## PRODUCT DESCRIPTION

Finnfoam XPS is a thermal insulation board which retains its insulation capacity even in the most demanding conditions. The board´s special feature is its completely closed and consistent cell structure, which ensures a high insulation capacity and impermeability. Structures produced using Finnfoam XPS do not require separate vapor barriers or wind-proofing panels, which means that a single installation takes care of several work phases. Finnfoam XPS is used as building insulation, mainly for ground frost insulation and as insulation layers under concrete slabs. Finnfoam XPS thermal insulation boards are produced in different sizes and thicknesses, and in different strength classes. Thermal conductivity varies between 0.034-0.038 W/mK depending on thickness and strength class. This EPD is calculated for 1 m² of Finnfoam XPS 300 insulation material with thickness of 35 mm corresponding to RD-value=1m²K/W. GWP values per 1 m2 and RD-values of other products in the product group are presented in Annex 1. More information can be found on www.finnfoam.fi

## PRODUCT STANDARD

EN 13164:2012+A1:2015 Thermal insulation products for buildings.
Factory made extruded polystyrene foam (XPS) products.

## SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

## PRODUCT RAW MATERIAL MAIN COMPOSITION

| Raw material category | Amount, mass % | Material origin |
|---|---|---|
| Metals | 0 | - |
| Minerals | 0 | - |
| Fossil materials | 100 | Europe |
| Bio-based materials | 0 | - |

## BIOGENIC CARBON CONTENT

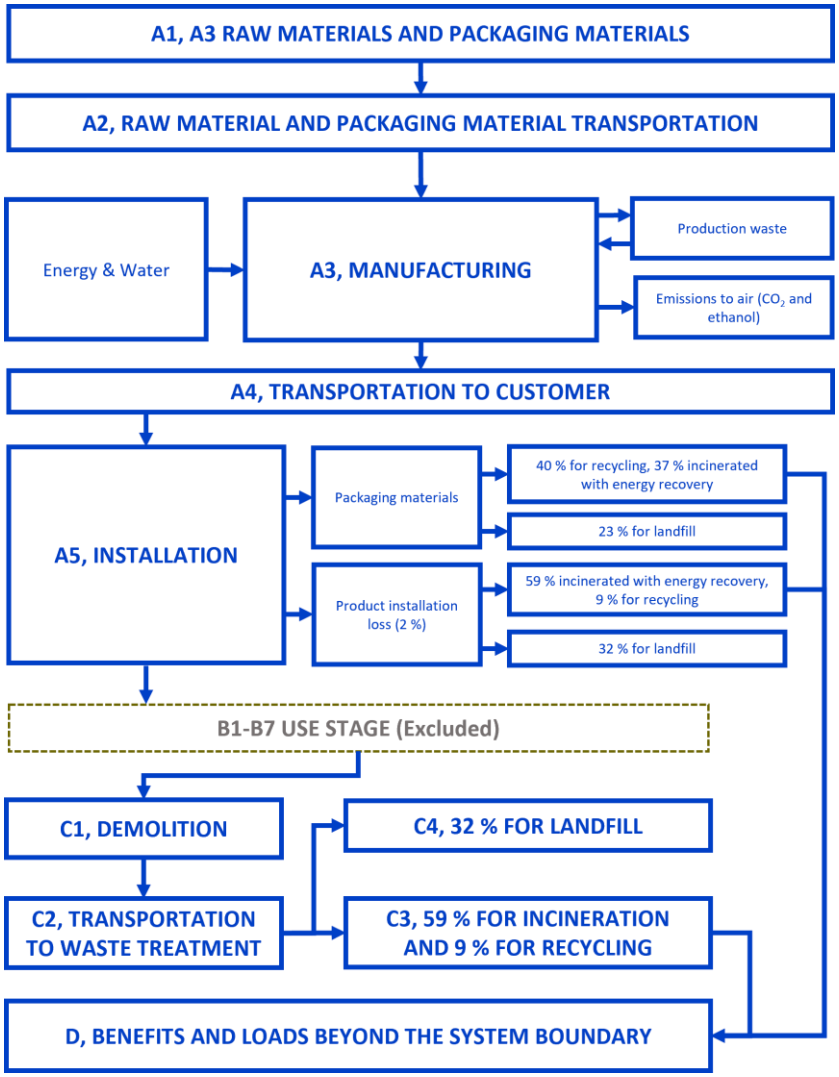
Product's biogenic carbon content at the factory gate.

| | |
|---|---|
| Biogenic carbon content in product, kg C | 0 |
| Biogenic carbon content in packaging, kg C | 0 |

## DECLARED / FUNCTIONAL UNIT AND SERVICE LIFE

| | |
|---|---|
| Declared unit | 1 m² of Finnfoam XPS 300 insulation material with thickness of 35 mm corresponding to RD-value=1m²K/W |
| Mass per declared unit | 1,12 kg |
| Functional unit | - |
| Reference service life | - |

# PRODUCT LIFE-CYCLE




## SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

| Product stage | | | Assembly stage | | Use stage | | | | | | | End of life stage | | | | Beyond the system boundaries | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D | | |
| X | X | X | X | X | ND | ND | ND | ND | ND | ND | ND | X | X | X | X | X | | |
| Raw materials | Transport | Manufacturing | Transport | Assembly | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | Deconstruction/ demolition | Transport | Waste processing | Disposal | Reuse | Recovery | Recycling |

*Modules not declared = ND. Modules not relevant = MNR*

## MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

The environmental impacts considered for the product stage include the production of raw materials (A1), transportation of raw materials to the manufacturing site (A2), and the manufacturing process (A3).

Raw materials are transported to the manufacturing site mainly by road transport, using average transport distances based on actual procurement data. The main raw material used is polystyrene. Polystyrene and colorant are melted and mixed, after which the mass is expanded using $CO_2$ and ethanol. The expanded material is extruded between tables into boards. After cooling, the boards are cut to the required dimensions. Packaging of the final product is included in module A3. The product is packed in low-density polyethylene (LDPE) film.

Manufacturing energy used in module A3 consists of electricity. A market-based approach is applied in modelling the electricity mix used at the manufacturing site. The use of carbon-free energy in manufacturing is demonstrated through contractual instruments (GOs, RECs, etc.), and its use is ensured throughout the validity period of this EPD.

Material losses occurring during the manufacturing process are considered in the study. Production losses are internally recycled back into the manufacturing process. Therefore, no manufacturing waste requiring external waste treatment is generated. As manufacturing waste is internally recycled on site, no transport of manufacturing waste outside the site is required. During storage, only $CO_2$ and some of ethanol contained in the product are released. No other manufacturing waste streams requiring end-of-life treatment occur in module A3.


## TRANSPORT AND INSTALLATION (A4-A5)

The construction process is divided into two modules: A4 (transport to the building site) and A5 (installation in the building).

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions. The transportation distance is assumed to be 120 km, representing the distance from manufacturer to the capital of Finland. Transport is carried out by lorry (16–32 metric ton, EURO 5), and empty return trips are included. Transportation does not cause product losses, as the products are properly packaged. The volume capacity utilization factor is assumed to be 1 for nested packaged products.

Module A5 includes product installation losses, energy use during installation, and the generation of waste at the construction site. Due to manual installation, energy and water use during the installation phase are considered negligible. Waste generated during installation is assumed to be 2% of the product, in accordance with EN 16783:2017.

It is assumed that 59% of the product installation waste is incinerated with energy recovery, 9% is recycled, and 32% is landfilled. Additionally, 40% of the packaging material is assumed to be recycled, 37% incinerated with energy recovery, and 23% is landfilled. An average transport distance of 50 km by lorry (16–32 metric ton, EURO 5) is assumed for waste transport, representing typical regional waste treatment logistics. The scenarios applied reflect current practices and are representative of one of the most likely waste treatment scenarios in Europe. Packaging and installation waste generated in module A5 is assumed to be treated according to these waste management routes. The potential benefits from recycling and energy

recovery of these flows are reported in Module D, where a substitution approach is applied.

### PRODUCT USE AND MAINTENANCE (B1-B7)

Use stage is subdivided into seven modules: B1 (Use), B2 (Maintenance), B3 (Repair), B4 (Replacement), B5 (Refurbishment), B6 (Operational energy use) and B7 (Operational water use).

This EPD does not cover use phase as it is assumed that the product will last in situ with no requirement for maintenance, repair, replacement or refurbishment throughout its service life. Also, the product doesn't use energy or water during its lifetime. Air, soil and water impacts during the use phase have not been studied.

### END OF LIFE (C1-C4, D)

The end-of-life stage is subdivided into four modules: C1 (demolition/deconstruction), C2 (transportation), C3 (waste processing) and C4 (disposal). Stage D describes benefits and loads beyond the system boundary.

Consumption of energy and natural resources in the demolition process is assumed to be negligible (C1). Transportation distance to the nearest waste treatment plant is assumed to be 50 km and vehicle type is assumed to be lorry (C2). End-of-life product weight is lower compared to the declared unit because blowing agent and ethanol are released during products storing and use stage. 59% of end-of-life product is assumed to be incinerated with energy recovery and 9% is assumed to be recycled (C3). 32% of end-of-life product is assumed to be landfilled (C4).

Module D includes the potential net benefits beyond the system boundary from material recycling and energy recovery. Scenarios included are currently in use and are representative for one of the most likely scenarios in Europe. In Module D, a substitution approach is applied. Energy recovered from incineration is modelled as electricity and district heat, which are assumed to substitute conventional electricity production (medium voltage) and district heat production, respectively. Recycled materials are assumed to substitute equivalent primary (virgin) material production.

# LIFE-CYCLE ASSESSMENT

### CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw materials and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process that is more than 1 % of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5 % of energy usage or mass. The production of capital equipment, construction activities, and infrastructure, maintenance and operation of capital equipment, personnel-related activities, energy and water use related to company management and sales activities are excluded.

### VALIDATION OF DATA

Data collection for production, transport, and packaging was conducted using time and site-specific information, as defined in the general information section on page 1 and 2. Upstream process calculations rely on generic data as defined in the Bibliography section. Manufacturer-provided specific and generic data were used for the product's manufacturing stage. The analysis was performed in One Click LCA EPD Generator, with the 'Cut-Off, EN 15804+A2' allocation method, and characterization factors according to EN 15804:2012+A2:2019/AC:2021 and JRC EF 3.1.

**Note on indicator consistency**: A technical inconsistency between PENRT (Total use of non-renewable primary energy) and ADP-fossil (Abiotic depletion potential for fossil resources) results in modules A1–A3 has been identified. A contribution analysis indicates that the discrepancy originates from the background environmental profiles of fossil-based plastic raw materials, such as polystyrene. The difference is related to the specific characterization factors and the treatment of fossil resources as both material feedstock and energy carriers in the background databases. These inconsistencies are inherent to the third-party verified background datasets used and cannot be influenced or adjusted by the LCA practitioner.

## LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.10.1 and One Click LCA databases as sources of environmental data. Also, IDEMAT and Plastics Europe data have been used. Allocation used in Ecoinvent 3.10.1 environmental data sources follow the methodology 'allocation, Cutoff, EN 15804+A2'. EN 16783 Thermal insulation products have been used as a c-PCR.

## ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are made according to the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

| Data type | Allocation |
|---|---|
| Raw materials | Allocated by mass |
| Packaging material | Allocated by mass |
| Ancillary materials | Allocated by mass |
| Manufacturing energy and waste | Allocated by mass |

## PRODUCT & MANUFACTURING SITES GROUPING

| | |
|---|---|
| Type of grouping | No grouping |
| Grouping method | N/A |
| Variation in GWP-fossil for A1-A3 (%) | N/A |

Products are produced at one location with the same manufacturing process. Finnfoam XPS thermal insulation boards are produced in different sizes and thicknesses, and in different strength classes. Thermal conductivity varies between 0.034-0.038 W/mK depending on thickness and strength class. This EPD is calculated for 1 $m^2$ of Finnfoam XPS 300 insulation material with thickness of 35 mm corresponding to $R_D$-value=1$m^2$K/W. GWP-values per 1 $m^2$ and $R_D$-values of other products in the product group are presented in Annex 1. Products are homogeneous and therefore linearly scalable.

# ENVIRONMENTAL IMPACT DATA

## CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

*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.*

Note: Environmental performance results are presented per declared unit, defined as 1 $m^2$ of Finnfoam XPS 300 insulation material with 35 mm thickness corresponding to RD-value=1$m^2$K/W. GWP-values per 1 $m^2$ and RD-values of other thicknesses are presented in Annex 1.

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GWP – total[1)] | kg $CO_2$e | 2,32E+00 | 3,71E-01 | 8,64E-02 | 2,78E+00 | 2,45E-02 | 1,08E-01 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,00E-02 | 1,97E+00 | 4,06E-02 | -1,01E+00 |
| GWP – fossil | kg $CO_2$e | 2,32E+00 | 3,71E-01 | 8,70E-02 | 2,78E+00 | 2,45E-02 | 1,08E-01 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,00E-02 | 1,97E+00 | 4,06E-02 | -1,00E+00 |
| GWP – biogenic | kg $CO_2$e | 2,30E-04 | 6,95E-05 | -6,82E-04 | -3,83E-04 | 4,85E-06 | -2,85E-07 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,98E-06 | 2,60E-05 | -2,08E-05 | -7,72E-04 |
| GWP – LULUC | kg $CO_2$e | 4,44E-05 | 1,41E-04 | 4,88E-05 | 2,34E-04 | 8,65E-06 | 5,65E-06 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 3,53E-06 | 1,35E-05 | 2,46E-06 | -1,22E-03 |
| Ozone depletion pot. | kg CFC-$_{11}$e | 2,31E-09 | 6,97E-09 | 4,59E-10 | 9,74E-09 | 4,87E-10 | 2,22E-10 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,99E-10 | 2,95E-10 | 9,56E-11 | -1,01E-08 |
| Acidification potential | mol $H^+$e | 2,62E-04 | 3,13E-03 | 1,76E-04 | 3,56E-03 | 7,65E-05 | 8,19E-05 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 3,13E-05 | 2,62E-04 | 2,67E-05 | -4,87E-03 |
| EP-freshwater[2)] | kg Pe | 3,68E-02 | 2,18E-05 | 7,67E-06 | 3,68E-02 | 1,62E-06 | 7,37E-04 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 6,63E-07 | 4,02E-06 | 3,97E-07 | -3,89E-03 |
| EP-marine | kg Ne | 4,56E-05 | 8,68E-04 | 8,46E-05 | 9,98E-04 | 2,58E-05 | 3,00E-05 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,05E-05 | 1,39E-04 | 2,27E-04 | -7,26E-04 |
| EP-terrestrial | mol Ne | 4,12E-04 | 9,56E-03 | 3,74E-04 | 1,03E-02 | 2,81E-04 | 2,55E-04 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,15E-04 | 1,29E-03 | 1,08E-04 | -7,16E-03 |
| POCP ("smog")[3)] | kg NMVOCe | 4,60E-03 | 3,12E-03 | 1,39E-02 | 2,16E-02 | 1,20E-04 | 4,46E-04 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 4,90E-05 | 3,24E-04 | 3,48E-03 | -2,76E-03 |
| ADP-minerals & metals[4)] | kg Sbe | 8,54E-07 | 1,04E-06 | 2,38E-07 | 2,13E-06 | 8,01E-08 | 4,97E-08 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 3,27E-08 | 9,90E-08 | 8,35E-09 | -1,10E-06 |
| ADP-fossil resources | MJ | 4,57E+01 | 5,07E+00 | 1,19E+01 | 6,27E+01 | 3,44E-01 | 1,27E+00 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,40E-01 | 2,24E-01 | 8,23E-02 | -1,72E+01 |
| Water use[5)] | $m^3$e depr. | 2,15E-02 | 2,28E-02 | 1,16E-01 | 1,60E-01 | 1,69E-03 | 4,25E-03 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 6,90E-04 | 3,28E-02 | 4,11E-04 | -2,45E-01 |

*1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.*

## ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, EF 3.1

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Particulate matter | Incidence | 4,03E-08 | 2,55E-08 | 2,98E-09 | 6,88E-08 | 1,92E-09 | 1,51E-09 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 7,86E-10 | 1,56E-09 | 5,96E-10 | -4,30E-08 |
| Ionizing radiation[6)] | kBq U235e | 7,00E-03 | 5,68E-03 | 9,26E-01 | 9,39E-01 | 4,38E-04 | 1,88E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,79E-04 | 5,98E-04 | 8,40E-05 | -2,39E-01 |
| Ecotoxicity (freshwater) | CTUe | 7,92E-01 | 6,11E-01 | 1,51E-01 | 1,55E+00 | 4,51E-02 | 7,76E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,84E-02 | 1,88E+00 | 1,28E-01 | -1,54E+00 |
| Human toxicity, cancer | CTUh | 2,87E-10 | 6,58E-11 | 4,77E-11 | 4,01E-10 | 4,17E-12 | 1,13E-11 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,70E-12 | 1,23E-10 | 1,24E-11 | -1,80E-10 |
| Human tox. non-cancer | CTUh | 2,22E-09 | 2,83E-09 | 4,14E-10 | 5,47E-09 | 2,16E-10 | 2,35E-10 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 8,82E-11 | 4,47E-09 | 3,42E-10 | -6,53E-09 |
| SQP[7)] | - | 2,07E-01 | 2,55E+00 | 4,43E-02 | 2,80E+00 | 2,05E-01 | 7,40E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 8,36E-02 | 1,33E-01 | 1,91E-01 | -4,34E+00 |

6) EN 15804+A2 disclaimer for Ionizing radiation, human health. 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 nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator; 7) SQP = Land use related impacts/soil quality.

## USE OF NATURAL RESOURCES

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Renew. PER as energy[8)] | MJ | 6,65E-01 | 7,83E-02 | 1,04E-01 | 8,47E-01 | 5,94E-03 | 1,76E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 2,43E-03 | 1,04E-02 | 1,31E-03 | -2,66E+00 |
| Renew. PER as material | MJ | 0,00E+00 | 0,00E+00 | 7,21E-03 | 7,21E-03 | 0,00E+00 | -7,21E-03 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Total use of renew. PER | MJ | 6,65E-01 | 7,83E-02 | 1,11E-01 | 8,54E-01 | 5,94E-03 | 1,04E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 2,43E-03 | 1,04E-02 | 1,31E-03 | -2,66E+00 |
| Non-re. PER as energy | MJ | 4,54E+01 | 5,07E+00 | 1,14E+01 | 6,19E+01 | 3,44E-01 | 7,65E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,40E-01 | -2,74E+01 | -1,27E+01 | -1,36E+01 |
| Non-re. PER as material | MJ | 4,15E+01 | 0,00E+00 | -5,33E-01 | 4,09E+01 | 0,00E+00 | -4,84E-01 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | -2,75E+01 | -1,29E+01 | -3,55E+00 |
| Total use of non-re. PER | MJ | 8,69E+01 | 5,07E+00 | 1,09E+01 | 1,03E+02 | 3,44E-01 | -4,08E-01 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,40E-01 | -5,49E+01 | -2,56E+01 | -1,71E+01 |
| Secondary materials | kg | 4,10E-04 | 2,30E-03 | 1,68E-04 | 2,88E-03 | 1,57E-04 | 8,79E-05 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 6,43E-05 | 5,45E-04 | 2,97E-05 | -9,36E-02 |
| Renew. secondary fuels | MJ | 3,64E-06 | 2,50E-05 | 1,75E-06 | 3,04E-05 | 1,99E-06 | 8,71E-07 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 8,12E-07 | 4,08E-06 | 5,57E-07 | -6,92E-06 |
| Non-ren. secondary fuels | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Use of net fresh water | $m^3$ | 3,92E-01 | 6,18E-04 | 2,73E-03 | 3,95E-01 | 4,63E-05 | 7,89E-03 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 1,89E-05 | 3,61E-04 | -1,22E-03 | -1,24E-02 |

*8) PER = Primary energy resources.*

## END OF LIFE – WASTE

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hazardous waste | kg | 2,94E-02 | 7,08E-03 | 4,12E-03 | 4,06E-02 | 4,93E-04 | 1,24E-03 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 2,01E-04 | 1,41E-02 | 1,45E-04 | -5,87E-02 |
| Non-hazardous waste | kg | 4,67E-01 | 1,41E-01 | 6,63E-01 | 1,27E+00 | 1,04E-02 | 8,78E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 4,25E-03 | 6,77E-01 | 1,64E+00 | -2,41E+00 |
| Radioactive waste | kg | 2,18E-06 | 1,41E-06 | 2,21E-04 | 2,24E-04 | 1,09E-07 | 4,49E-06 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 4,45E-08 | 1,52E-07 | 2,06E-08 | -6,13E-05 |

## END OF LIFE – OUTPUT FLOWS

| Impact category | Unit | A1 | A2 | A3 | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | 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 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Materials for recycling | kg | 0,00E+00 | 0,00E+00 | 4,92E-04 | 4,92E-04 | 0,00E+00 | 5,49E-03 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 9,40E-02 | 0,00E+00 | 0,00E+00 |
| Materials for energy recovery | kg | 0,00E+00 | 0,00E+00 | 1,03E-05 | 1,03E-05 | 0,00E+00 | 1,56E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 6,10E-01 | 0,00E+00 | 0,00E+00 |
| Exported energy | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 2,36E-01 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 8,98E+00 | 0,00E+00 | 0,00E+00 |
| Exported energy – Electricity | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 9,95E-02 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 3,78E+00 | 0,00E+00 | 0,00E+00 |
| Exported energy – Heat | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,36E-01 | ND | ND | ND | ND | ND | ND | ND | 0,00E+00 | 0,00E+00 | 5,20E+00 | 0,00E+00 | 0,00E+00 |

# SCENARIO DOCUMENTATION

## MANUFACTURING ENERGY SCENARIO DOCUMENTATION (A3)

| Scenario parameter | Value |
|---|---|
| Electricity data source and quality | Electricity production, nuclear, boiling water reactor, Finland, Ecoinvent, 0.0077 kgCO2e/kWh<br><br>Electricity production, photovoltaic, 3kWp slanted-roof installation, multi-Si, panel, mounted, Finland, Ecoinvent, 0.0806 kgCO2e/kWh |

## TRANSPORT SCENARIO DOCUMENTATION (A4)

| Scenario parameter | Value |
|---|---|
| Scenario assumptions e.g. transportation | lorry 16-32 metric ton, EURO5 |
| Average transport distance, km | 120 |
| Capacity utilization (including empty return) % | 50 |
| Bulk density of transported products kg/m$^3$ | 32,3 |
| Volume capacity utilization factor | 1 |

## INSTALLATION SCENARIO DOCUMENTATION (A5)

| Scenario information | Value |
|---|---|
| Energy: type and consumption (MJ or kWh) | As installation is carried out manually, installation energy is estimated to be negligible |
| Water use (m$^3$) | - |
| Ancillary materials: type and mass (kg) | - |
| Waste materials: type and mass (kg) | Product installation waste 0,021 kg<br>LDPE film: 0,009 kg |
| Waste materials: output routes | Product installation waste:<br>0,012 kg for energy recovery<br>0,002 kg for recycling<br>0,007 kg for landfill<br><br>LDPE film:<br>0,0033 kg for energy recovery<br>0,0036 kg for recycling<br>0,0021 kg for landfill |
| Direct emissions (kg) | - |

## END OF LIFE SCENARIO DOCUMENTATION (C1-C4)

| Scenario information | Value |
|---|---|
| Collection process: collected separately (kg) | 1,04 |
| Collection process: mixed waste (kg) | 0,00 |
| Recovery: re-use (kg) | 0,00 |
| Recovery: recycling (kg) | 0,094 |
| Recovery process: energy recovery (kg) | 0,61 |
| Disposal (kg) | 0,33 |
| Scenario assumptions e.g. transportation | 50 km, lorry 16-32 metric ton, EURO5 |

# THIRD-PARTY VERIFICATION STATEMENT

EPD Hub declares that this EPD is verified in accordance with ISO 14025 by an independent, third-party verifier. The project report on the Life Cycle Assessment and the report(s) on features of environmental relevance are filed at EPD Hub. EPD Hub PCR and ECO Platform verification checklist are used.

EPD Hub is not able to identify any unjustified deviations from the PCR and EN 15802+A2 in the Environmental Product Declaration and its project report.

EPD Hub maintains its independence as a third-party body; it was not involved in the execution of the LCA or in the development of the declaration and has no conflicts of interest regarding this verification.

The company-specific data and upstream and downstream data have been examined as regards plausibility and consistency. The publisher is responsible for ensuring the factual integrity and legal compliance of this declaration.

The software used in creation of this LCA and EPD is verified by EPD Hub to conform to the procedural and methodological requirements outlined in ISO 14025:2010, ISO 14040/14044, EN 15804+A2, and EPD Hub Core Product Category Rules and General Program Instructions.

Verified tools

Tool verifier: Magaly Gonzalez Vazquez
Tool verification validity: 27 March 2025 - 26 March 2028

Dusan Vukovic as an authorized verifier for EPD Hub Limited 31.07.2026

## ANNEX 1: SCALING TABLES

GWP-values and scaling factors for different product types

| Product | | Finnfoam FI-300, Finnfoam FL-300, Finnfoam FK-300 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Thickness (mm) | | 20 | 30 | 35 | 40 | 50 | 60 | 70 | 80 | 100 | 120 | 140 | 150 | 250 |
| $R_D$ value ($m^2K/W$) | | 0,55 | 0,85 | 1,00 | 1,10 | 1,40 | 1,70 | 2,00 | 2,20 | 2,70 | 3,15 | 4,00 | 4,15 | 6,55 |
| Scaling factors | | 0,57 | 0,86 | 1,00 | 1,14 | 1,43 | 1,71 | 2,00 | 2,29 | 2,86 | 3,43 | 4,00 | 4,29 | 7,14 |
| Impact category | | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 |
| EN 15804+A2, PEF Results per 1 $m^2$ | GWP-total | 1,59E+00 | 2,38E+00 | 2,78E+00 | 3,18E+00 | 3,97E+00 | 4,77E+00 | 5,56E+00 | 6,35E+00 | 7,94E+00 | 9,53E+00 | 1,11E+01 | 1,19E+01 | 1,99E+01 |
| | GWP-fossil | 1,59E+00 | 2,38E+00 | 2,78E+00 | 3,18E+00 | 3,97E+00 | 4,77E+00 | 5,56E+00 | 6,35E+00 | 7,94E+00 | 9,53E+00 | 1,11E+01 | 1,19E+01 | 1,99E+01 |
| | GWP-biogenic | 2,19E-04 | 3,28E-04 | 3,83E-04 | 4,38E-04 | 5,47E-04 | 6,57E-04 | 7,66E-04 | 8,75E-04 | 1,09E-03 | 1,31E-03 | 1,53E-03 | 1,64E-03 | 2,74E-03 |
| | GWP-LULUC | 1,34E-04 | 2,01E-04 | 2,34E-04 | 2,67E-04 | 3,34E-04 | 4,01E-04 | 4,68E-04 | 5,35E-04 | 6,69E-04 | 8,02E-04 | 9,36E-04 | 1,00E-03 | 1,67E-03 |

| Product | | Finnfoam FI-400, Finnfoam FL-400, Finnfoam FI-400 URA | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Thickness (mm) | | 30 | 40 | 50 | 60 | 70 | 80 | 100 | 120 | 140 | 150 | 180 | 200 | 220 | 250 |
| $R_D$ value ($m^2K/W$) | | 0,85 | 1,10 | 1,40 | 1,70 | 2,00 | 2,20 | 2,70 | 3,15 | 4,00 | 4,15 | 4,85 | 5,85 | 5,75 | 6,55 |
| Scaling factors | | 0,91 | 1,21 | 1,52 | 1,82 | 2,13 | 2,43 | 3,04 | 3,64 | 4,25 | 4,55 | 5,46 | 6,07 | 6,68 | 7,59 |
| Impact category | | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 |
| EN 15804+A2, PEF Results per 1 $m^2$ | GWP-total | 2,53E+00 | 3,38E+00 | 4,22E+00 | 5,06E+00 | 5,91E+00 | 6,75E+00 | 8,44E+00 | 1,01E+01 | 1,18E+01 | 1,27E+01 | 1,52E+01 | 1,69E+01 | 1,86E+01 | 2,11E+01 |
| | GWP-fossil | 2,53E+00 | 3,38E+00 | 4,22E+00 | 5,06E+00 | 5,91E+00 | 6,75E+00 | 8,44E+00 | 1,01E+01 | 1,18E+01 | 1,27E+01 | 1,52E+01 | 1,69E+01 | 1,86E+01 | 2,11E+01 |
| | GWP-biogenic | 3,49E-04 | 4,65E-04 | 5,81E-04 | 6,98E-04 | 8,14E-04 | 9,30E-04 | 1,16E-03 | 1,40E-03 | 1,63E-03 | 1,74E-03 | 2,09E-03 | 2,33E-03 | 2,56E-03 | 2,91E-03 |
| | GWP-LULUC | 2,13E-04 | 2,84E-04 | 3,55E-04 | 4,26E-04 | 4,97E-04 | 5,68E-04 | 7,10E-04 | 8,52E-04 | 9,95E-04 | 1,07E-03 | 1,28E-03 | 1,42E-03 | 1,56E-03 | 1,78E-03 |

| Product | | Finnfoam FL-500 | | | | | | Finnfoam FL-700 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Thickness (mm) | | 50 | 60 | 70 | 80 | 100 | 120 | 50 | 100 | 120 |
| $R_D$value ($m^2K/W$) | | 1,40 | 1,70 | 2,00 | 2,20 | 2,70 | 3,15 | 1,40 | 2,70 | 3,15 |
| Scaling factors | | 1,70 | 2,04 | 2,38 | 2,71 | 3,39 | 4,07 | 1,88 | 3,75 | 4,50 |
| Impact category | | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 |
| EN 15804+A2, PEF Results per 1 m2 | GWP-total | 4,72E+00 | 5,66E+00 | 6,60E+00 | 7,55E+00 | 9,43E+00 | 1,13E+01 | 5,21E+00 | 1,04E+01 | 1,25E+01 |
| | GWP-fossil | 4,72E+00 | 5,66E+00 | 6,60E+00 | 7,55E+00 | 9,43E+00 | 1,13E+01 | 5,21E+00 | 1,04E+01 | 1,25E+01 |
| | GWP-biogenic | 6,50E-04 | 7,80E-04 | 9,10E-04 | 1,04E-03 | 1,30E-03 | 1,56E-03 | 7,18E-04 | 1,44E-03 | 1,72E-03 |
| | GWP-LULUC | 3,97E-04 | 4,76E-04 | 5,56E-04 | 6,35E-04 | 7,94E-04 | 9,53E-04 | 4,39E-04 | 8,78E-04 | 1,05E-03 |

| Product | | Finnfoam VR | | | | | Finnfoam CW-300 | Finnfoam FL-K600 | | Finnfoam FI-K600 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Thickness (mm) | | 40 | 60 | 80 | 100 | 120 | 100 | 140 | 210 | 210 | 250 | 370 |
| $R_D$ value ($m^2K/W$) | | 1,10 | 1,70 | 2,20 | 2,70 | 3,15 | 2,70 | 4,00 | 6,15 | 6,15 | 6,55 | 10,85 |
| Scaling factors | | 1,36 | 2,04 | 2,71 | 3,39 | 4,07 | 2,86 | 4,00 | 6,00 | 6,00 | 7,14 | 10,57 |
| Impact category | | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 |
| EN 15804+A2, PEF Results per 1 m2 | GWP-total | 3,77E+00 | 5,66E+00 | 7,55E+00 | 9,43E+00 | 1,13E+01 | 7,94E+00 | 1,11E+01 | 1,67E+01 | 1,67E+01 | 1,99E+01 | 2,94E+01 |
| | GWP-fossil | 3,77E+00 | 5,66E+00 | 7,55E+00 | 9,43E+00 | 1,13E+01 | 7,94E+00 | 1,11E+01 | 1,67E+01 | 1,67E+01 | 1,99E+01 | 2,94E+01 |
| | GWP-biogenic | 5,20E-04 | 7,80E-04 | 1,04E-03 | 1,30E-03 | 1,56E-03 | 1,09E-03 | 1,53E-03 | 2,30E-03 | 2,30E-03 | 2,74E-03 | 4,05E-03 |
| | GWP-LULUC | 3,18E-04 | 4,76E-04 | 6,35E-04 | 7,94E-04 | 9,53E-04 | 6,69E-04 | 9,36E-04 | 1,40E-03 | 1,40E-03 | 1,67E-03 | 2,47E-03 |

| Product | | Finnfoam HU | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Thickness (mm) | | 19 | 25 | 30 | 36 | 40 | 45 | 46 | 50 | 60 | 70 | 80 | 100 |
| $R_D$ value ($m^2K/W$) | | 0,55 | 0,70 | 0,85 | 1,00 | 1,10 | 1,25 | 1,30 | 1,40 | 1,70 | 2,00 | 2,20 | 2,70 |
| Scaling factors | | 0,54 | 0,71 | 0,91 | 1,09 | 1,21 | 1,37 | 1,40 | 1,52 | 1,82 | 2,38 | 2,71 | 3,39 |
| Impact category | | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 | A1-A3 |
| EN 15804+A2, PEF Results per 1 m2 | GWP-total | 1,51E+00 | 1,99E+00 | 2,53E+00 | 3,04E+00 | 3,38E+00 | 3,80E+00 | 3,88E+00 | 4,22E+00 | 5,06E+00 | 6,60E+00 | 7,55E+00 | 9,43E+00 |
| | GWP-fossil | 1,51E+00 | 1,99E+00 | 2,53E+00 | 3,04E+00 | 3,38E+00 | 3,80E+00 | 3,88E+00 | 4,22E+00 | 5,06E+00 | 6,60E+00 | 7,55E+00 | 9,43E+00 |
| | GWP-biogenic | 2,08E-04 | 2,74E-04 | 3,49E-04 | 4,19E-04 | 4,65E-04 | 5,23E-04 | 5,35E-04 | 5,81E-04 | 6,98E-04 | 9,10E-04 | 1,04E-03 | 1,30E-03 |
| | GWP-LULUC | 1,27E-04 | 1,67E-04 | 2,13E-04 | 2,56E-04 | 2,84E-04 | 3,20E-04 | 3,27E-04 | 3,55E-04 | 4,26E-04 | 5,56E-04 | 6,35E-04 | 7,94E-04 |