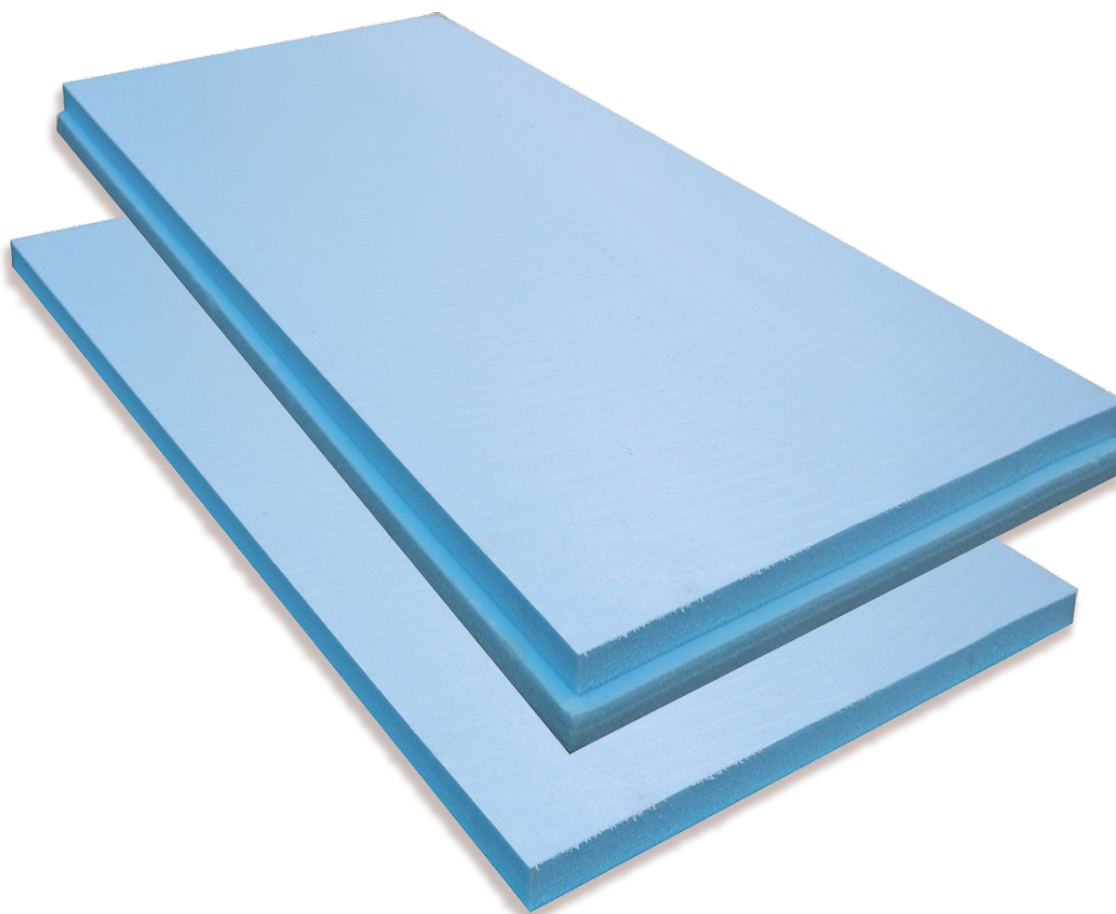


# Environmental product declaration

in accordance with ISO 14025 and EN 15804+A2

Jackofoam XPS Bewi Finland Oy



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**BEWI**

The Norwegian EPD Foundation

**Owner of the declaration:**

BEWI ASA, Insulation and Construction

**Product:**

Jackofoam XPS Bewi Finland Oy

**Declared unit:**

1 kg

**This declaration is based on Product Category Rules:**

CEN Standard EN 15804:2012+A2:2019 serves as core PCR.

NPCR 012:2022 Part B for Thermal insulation products

**Program operator:**

The Norwegian EPD Foundation

**Declaration number:**

NEPD-6703-6026-EN

**Registration number:**

NEPD-6703-6026-EN

**Issue date:** 27.05.2024

**Valid to:** 27.05.2029

**EPD software:**

LCAno EPD generator ID: 225589

## General information

### Product

Jackofoam XPS Bewi Finland Oy

### Program operator:

The Norwegian EPD Foundation  
Post Box 5250 Majorstuen, 0303 Oslo, Norway  
Phone: +47 977 22 020  
web: [www.epd-norge.no](http://www.epd-norge.no)

### Declaration number:

NEPD-6703-6026-EN

### This declaration is based on Product Category Rules:

CEN Standard EN 15804:2012+A2:2019 serves as core PCR.  
NPCR 012:2022 Part B for Thermal insulation products

### Statement of liability:

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

### Declared unit:

1 kg Jackofoam XPS Bewi Finland Oy

### Declared unit with option:

A1,A2,A3,A4,A5,C1,C2,C3,C4,D

### Functional unit:

For the base is used density of 30 kg/m<sup>3</sup>. There is included conversion table for kg to m<sup>2</sup>

### General information on verification of EPD from EPD tools:

Independent verification of data, other environmental information and the declaration according to ISO 14025:2010, § 8.1.3 and § 8.1.4. Verification of each EPD is made according to EPD-Norway's guidelines for verification and approval requiring that tools are i) integrated into the company's environmental management system, ii) the procedures for use of the EPD tool are approved by EPD-Norway, and iii) the process is reviewed annually by an independent third party verifier. See Appendix G of EPD-Norway's General Programme Instructions for further information on EPD tools

### Verification of EPD tool:

Independent third party verification of the EPD tool, background data and test-EPD in accordance with EPDNorway's procedures and guidelines for verification and approval of EPD tools.

Third party verifier:

Elisabet Amat, GREENIZE projects

(no signature required)

### Owner of the declaration:

BEWI ASA, Insulation and Construction  
Contact person: Marc Storm Andersen  
Phone: +45 72157902  
e-mail: [marc.andersen@bewi.com](mailto:marc.andersen@bewi.com)

### Manufacturer:

BEWI Insulation Finland  
Toravantie 18  
38210 Sastamala, Finland

### Place of production:

BEWI Kaavi  
Varikkotie 4  
73600 Kaavi, Finland

### Management system:

ISO 14001 og 9001 for all production sites

### Organisation no:

925437948

### Issue date:

27.05.2024

### Valid to:

27.05.2029

### Year of study:

2023

### Comparability:

EPD of construction products may not be comparable if they not comply with EN 15804:2012+A2:2019 and seen in a building context.

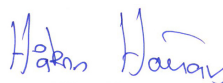
### Development and verification of EPD:

The declaration is created using EPD tool lca.tools ver EPD2022.03, developed by LCA.no. The EPD tool is integrated in the company's management system, and has been approved by EPD Norway.

Developer of EPD: Pirkka Ulmanen

Reviewer of company-specific input data and EPD: Mark Plate

### Approved:



Håkon Hauan  
Managing Director of EPD-Norway

## Product

### Product description:

The insulation board is provided in several dimensions and thicknesses. Please use the conversion table below for other sizes than the declared unit. Extruded polystyrene (XPS) is a common material used for thermal insulation of buildings and constructions. It's a polymer foam, consisting of airfilled polystyrene cells. As most of the material is air, XPS provides good insulating properties at a low weight. Other characteristics of the material include low moisture absorption, long service life and high compressive strength. This LCA is based on Jackofoam 300 and can be used for all Jackofoam products with the conversion factor which can be found under System boundaries

### Product specification

XPS is manufactured through an extruder where polystyrene granulates are mixed with additives and foaming agents to produce the foam mass. The foam mass is pressed out flat to a board through a nozzle in desired thickness and cut into correct dimensions. Some of the remaining blowing agents are aired out before the product leaves the factory gate. The number of the product is the pressure class; here 300 which means a short dermation of 10% when the load of the product is 300 kN/m<sup>2</sup>.

| Materials                  | kg   | %      |
|----------------------------|------|--------|
| Filler                     | 0,01 | 1,43   |
| Plastic - Recycled         | 0,35 | 34,86  |
| Expansion gas              | 0,07 | 6,68   |
| Plastic - Polystyrene (PS) | 0,57 | 57,03  |
| Total                      | 1,00 | 100,00 |

| Packaging             | kg   | %      |
|-----------------------|------|--------|
| Packaging - Plastic   | 0,03 | 100,00 |
| Total incl. packaging | 1,03 | 100,00 |

### Technical data:

Marking: XPS insulation boards are CE certified according to SFS-EN 13164:2012 + A1:2015

Typical size: 600 x 1200, 600 x 2400, 585 x 2385 mm (EN 822)

Typical thickness: 30 mm - 100 mm (EN 823)

Lambda: 0,034-0,036 W/mK (EN 13164)

Moisture absorption: <0,7 vol% (EN 12087)

Fire classification: F (EN 13501-1)

Density:

Jackofoam 300: 30,0 kg/m<sup>3</sup>

Jackofoam 400: 34,0 kg/m<sup>3</sup>

Jackofoam 500: 36,0 kg/m<sup>3</sup>

### Market:

Finland

### Reference service life, product

As in the construction where it is used.

### Reference service life, building or construction works

As in the construction where it is used.

## LCA: Calculation rules

### Declared unit:

1 kg Jackofoam XPS Bewi Finland Oy

### Cut-off criteria:

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not apply for hazardous materials and substances.

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not? apply for hazardous materials and substances.

### Allocation:

The allocation is made in accordance with the provisions of EN 15804+A2. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis. The allocation is made in accordance with the provisions of EN 15804. Incoming energy and water and waste production in-house is allocated equally among all products through mass allocation. Effects of primary production of recycled materials is allocated to the main product in which the material was used. The recycling process and transportation of the material is allocated to this analysis.

#### Data quality:

Specific data for the product composition are provided by the manufacturer. The data represent the production of the declared product and were collected for EPD development in the year of study. Background data is based on EPDs according to EN 15804 and different LCA databases. The data quality of the raw materials in A1 is presented in the table below.

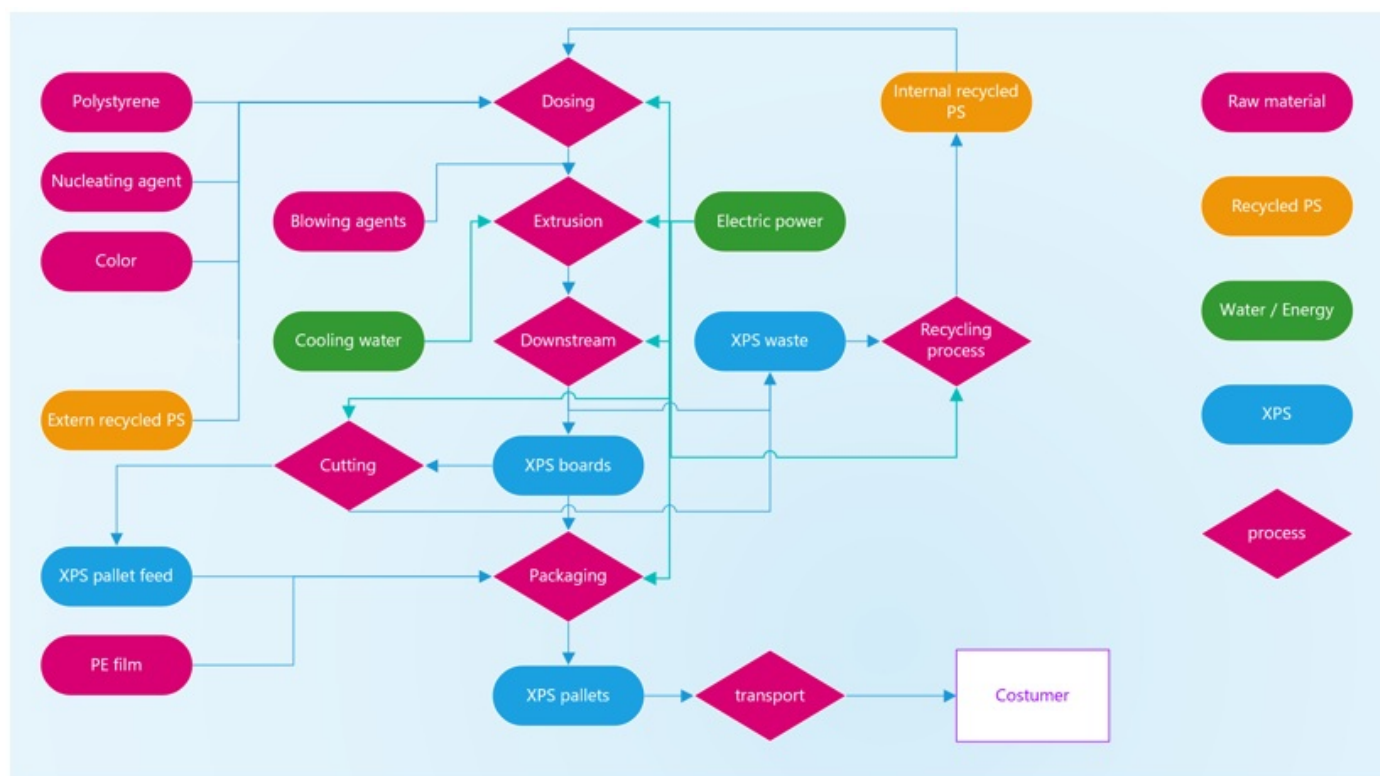
| Materials                  | Source        | Data quality | Year |
|----------------------------|---------------|--------------|------|
| Expansion gas              | ecoinvent 3.6 | Database     | 2019 |
| Expansion gas              | ecoinvent 3.6 | Database     | 2020 |
| Filler                     | ecoinvent 3.6 | Database     | 2019 |
| Packaging - Plastic        | ecoinvent 3.6 | Database     | 2019 |
| Plastic - Polystyrene (PS) | ecoinvent 3.6 | Database     | 2019 |
| Plastic - Recycled         |               | EPD          | 2023 |

## System boundaries (X=included, MND=module not declared, MNR=module not relevant)

| Product stage |           |               | Construction installation stage |          | Use stage |             |        |             |               |                        |                       | End of life stage          |           |                  |          | Beyond the system boundaries        |
|---------------|-----------|---------------|---------------------------------|----------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|-----------|------------------|----------|-------------------------------------|
| Raw materials | Transport | Manufacturing | Transport                       | 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         | MND    | MND         | MND           | MND                    | MND                   | X                          | X         | X                | X        | X                                   |

### System boundary:

All major raw materials and all the essential energy is included. The production processes for raw materials and energy flows with very small amounts (less than 1%) are not included. These cut-off criteria do not? apply for hazardous materials and substances.



| Conversion table for kg to m2 |       |       |       |       |        |
|-------------------------------|-------|-------|-------|-------|--------|
| Quality                       | 30 mm | 50 mm | 70 mm | 80 mm | 100 mm |
| 300                           | 0,98  | 1,63  | 2,28  | 2,60  | 3,25   |
| 400                           | 1,03  | 1,72  | 2,40  | 2,74  | 3,43   |
| 500                           | 1,06  | 1,76  | 2,46  | 2,82  | 3,52   |

### Additional technical information:

## LCA: Scenarios and additional technical information

The following information describe the scenarios in the different modules of the EPD.

| Transport from production place to user (A4)                              | Capacity utilisation (incl. return) % | Distance (km) | Fuel/Energy Consumption | Unit  | Value (Liter/tonne) |
|---------------------------------------------------------------------------|---------------------------------------|---------------|-------------------------|-------|---------------------|
| Truck, over 32 tonnes, EURO 6 (kgkm)                                      | 53,3 %                                | 200           | 0,023                   | l/tkm | 4,60                |
| Assembly (A5)                                                             | Unit                                  | Value         |                         |       |                     |
| Waste, packaging, plastic to average treatment - A5 (inkl transport) (kg) | kg                                    | 0,03          |                         |       |                     |
| De-construction demolition (C1)                                           | Unit                                  | Value         |                         |       |                     |
| Waste treatment, PS, Insulation, Finland (kg)                             | kg/DU                                 | 1,00          |                         |       |                     |
| Transport to waste processing (C2)                                        | Capacity utilisation (incl. return) % | Distance (km) | Fuel/Energy Consumption | Unit  | Value (Liter/tonne) |
| Truck, 7.5-16 tonnes, EURO 6 (kgkm)                                       | 35,4 %                                | 30            | 0,056                   | l/tkm | 1,68                |
| Truck, 7.5-16 tonnes, EURO 6 (kgkm)                                       | 35,4 %                                | 30            | 0,056                   | l/tkm | 1,68                |
| Waste processing (C3)                                                     | Unit                                  | Value         |                         |       |                     |
| Recycling of PS                                                           | kg                                    | 0,04          |                         |       |                     |
| Waste, Polystyrene, incineration                                          | kg                                    | 0,91          |                         |       |                     |
| Disposal (C4)                                                             | Unit                                  | Value         |                         |       |                     |
| Landfilling of ashes from incineration of PS                              | kg                                    | 0,00          |                         |       |                     |
| Waste, inert waste, to landfill (kg)                                      | kg                                    | 0,04          |                         |       |                     |
| Benefits and loads beyond the system boundaries (D)                       | Unit                                  | Value         |                         |       |                     |
| substitution of electricity (MJ)                                          | MJ                                    | 0,53          |                         |       |                     |
| Substitution of expandable polystyrene, EPS, granulate (kg)               | kg                                    | 0,04          |                         |       |                     |
| Substitution of thermal energy (MJ)                                       | MJ                                    | 29,15         |                         |       |                     |

## LCA: Results

The LCA results are presented below for the declared unit defined on page 2 of the EPD document.

| Environmental impact                                                                                               |                        |           |          |          |          |          |          |          |          |          |           |  |
|--------------------------------------------------------------------------------------------------------------------|------------------------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|--|
| Indicator                                                                                                          | Unit                   | A1        | A2       | A3       | A4       | A5       | C1       | C2       | C3       | C4       | D         |  |
|  GWP-total                        | kg CO <sub>2</sub> -eq | 2,50E+00  | 3,02E-01 | 4,64E+00 | 1,74E-02 | 2,38E-03 | 0,00E+00 | 1,29E-02 | 2,91E+00 | 4,95E-04 | -3,16E-01 |  |
|  GWP-fossil                       | kg CO <sub>2</sub> -eq | 2,49E+00  | 3,02E-01 | 4,64E+00 | 1,74E-02 | 2,38E-03 | 0,00E+00 | 1,28E-02 | 2,91E+00 | 4,95E-04 | -3,10E-01 |  |
|  GWP-biogenic                     | kg CO <sub>2</sub> -eq | 8,75E-03  | 1,19E-04 | 2,62E-03 | 7,46E-06 | 3,28E-07 | 0,00E+00 | 5,94E-06 | 2,01E-05 | 4,87E-07 | -1,08E-03 |  |
|  GWP-luluc                        | kg CO <sub>2</sub> -eq | 9,69E-04  | 1,07E-04 | 5,03E-03 | 5,31E-06 | 1,82E-07 | 0,00E+00 | 5,56E-06 | 3,18E-06 | 1,08E-07 | -5,79E-03 |  |
|  ODP                              | kg CFC 11 -eq          | 2,53E-08  | 6,74E-08 | 6,33E-08 | 4,20E-09 | 1,43E-10 | 0,00E+00 | 2,82E-09 | 2,09E-09 | 1,49E-10 | -1,23E-02 |  |
|  AP                               | mol H <sup>+</sup> -eq | 9,78E-03  | 1,54E-03 | 2,02E-03 | 5,61E-05 | 2,93E-06 | 0,00E+00 | 3,69E-05 | 3,46E-04 | 3,64E-06 | -1,84E-03 |  |
|  EP-FreshWater                    | kg P -eq               | 1,05E-05  | 2,28E-06 | 2,02E-05 | 1,39E-07 | 4,89E-09 | 0,00E+00 | 1,18E-07 | 2,06E-07 | 5,91E-09 | -1,70E-05 |  |
|  EP-Marine                        | kg N -eq               | 1,60E-03  | 3,30E-04 | 3,19E-04 | 1,23E-05 | 2,68E-06 | 0,00E+00 | 6,99E-06 | 1,66E-04 | 1,32E-06 | -5,25E-04 |  |
|  EP-Terrestrial                   | mol N -eq              | 1,74E-02  | 3,68E-03 | 4,01E-03 | 1,37E-04 | 1,05E-05 | 0,00E+00 | 7,85E-05 | 1,78E-03 | 1,46E-05 | -5,65E-03 |  |
|  POCP                             | kg NMVOC -eq           | 6,89E-03  | 1,17E-03 | 1,02E-03 | 5,38E-05 | 3,45E-06 | 0,00E+00 | 3,00E-05 | 4,27E-04 | 4,17E-06 | -1,78E-03 |  |
|  ADP-minerals&metals <sup>1</sup> | kg Sb -eq              | 3,55E-06  | 7,75E-06 | 3,70E-06 | 3,10E-07 | 1,26E-08 | 0,00E+00 | 4,64E-07 | 8,99E-08 | 3,97E-09 | -1,03E-06 |  |
|  ADP-fossil <sup>1</sup>          | MJ                     | 5,19E+01  | 4,50E+00 | 1,39E+01 | 2,83E-01 | 9,80E-03 | 0,00E+00 | 1,92E-01 | 1,78E-01 | 1,10E-02 | -5,61E+00 |  |
|  WDP <sup>1</sup>                 | m <sup>3</sup>         | -1,57E+00 | 4,12E+00 | 7,72E+02 | 2,17E-01 | 3,46E-02 | 0,00E+00 | 2,29E-01 | 3,96E-01 | 7,32E-02 | -8,45E+00 |  |

GWP-total = Global Warming Potential total; 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

"Reading example: 9,0 E-03 = 9,0\*10<sup>-3</sup> = 0,009"

\*INA Indicator Not Assessed

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator

## Remarks to environmental impacts

## Additional environmental impact indicators

| Indicator                                                                                             | Unit              | A1       | A2       | A3       | A4       | A5       | C1       | C2       | C3       | C4       | D         |
|-------------------------------------------------------------------------------------------------------|-------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
|  PM                  | Disease incidence | 7,92E-08 | 1,80E-08 | 9,04E-09 | 1,60E-09 | 5,30E-11 | 0,00E+00 | 7,20E-10 | 1,46E-09 | 7,30E-11 | -8,87E-08 |
|  IRP <sup>2</sup>    | kgBq U235 -eq     | 1,24E-02 | 1,97E-02 | 3,42E-01 | 1,24E-03 | 4,43E-05 | 0,00E+00 | 8,39E-04 | 2,98E-04 | 5,04E-05 | -1,32E-02 |
|  ETP-fw <sup>1</sup> | CTUe              | 5,38E+00 | 3,27E+00 | 9,80E+00 | 2,07E-01 | 9,35E-03 | 0,00E+00 | 1,50E-01 | 4,30E-01 | 7,67E-03 | -1,32E+01 |
|  HTP-c <sup>1</sup>  | CTUh              | 4,28E-10 | 0,00E+00 | 2,44E-10 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,22E-10 | 0,00E+00 | -2,44E-10 |
|  HTP-nc <sup>1</sup> | CTUh              | 7,71E-09 | 3,44E-09 | 6,31E-09 | 2,00E-10 | 9,00E-12 | 0,00E+00 | 1,80E-10 | 4,84E-09 | 8,00E-12 | -1,23E-08 |
|  SQP <sup>1</sup>    | dimensionless     | 1,72E+00 | 2,97E+00 | 8,47E+00 | 3,24E-01 | 1,71E-02 | 0,00E+00 | 1,14E-01 | 2,12E-02 | 4,09E-02 | -1,61E+01 |

PM = Particulate Matter emissions; IRP = Ionizing radiation – human health; ETP-fw = Eco toxicity – freshwater; HTP-c = Human toxicity – cancer effects; HTP-nc = Human toxicity – non cancer effects; SQP = Potential Soil Quality Index (dimensionless)

"Reading example: 9,0 E-03 =  $9,0 \cdot 10^{-3}$  = 0,009"

\*INA Indicator Not Assessed

1. The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator

2. 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.

| Resource use                                                                      |       |                |          |          |          |          |          |          |          |          |          |           |
|-----------------------------------------------------------------------------------|-------|----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Indicator                                                                         |       | Unit           | A1       | A2       | A3       | A4       | A5       | C1       | C2       | C3       | C4       | D         |
|  | PERE  | MJ             | 7,94E-01 | 6,15E-02 | 4,32E+00 | 3,56E-03 | 2,47E-04 | 0,00E+00 | 3,27E-03 | 5,13E-03 | 4,23E-04 | -1,33E+01 |
|  | PERM  | MJ             | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  |
|  | PERT  | MJ             | 7,94E-01 | 6,15E-02 | 4,32E+00 | 3,56E-03 | 2,47E-04 | 0,00E+00 | 3,27E-03 | 5,13E-03 | 4,23E-04 | -1,33E+01 |
|  | PENRE | MJ             | 2,86E+01 | 4,50E+00 | 1,44E+01 | 2,83E-01 | 9,80E-03 | 0,00E+00 | 1,92E-01 | 1,78E-01 | 1,10E-02 | -5,61E+00 |
|  | PENRM | MJ             | 2,32E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  |
|  | PENRT | MJ             | 5,19E+01 | 4,50E+00 | 1,44E+01 | 2,83E-01 | 9,80E-03 | 0,00E+00 | 1,92E-01 | 1,78E-01 | 1,10E-02 | -5,61E+00 |
|  | SM    | kg             | 3,93E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  |
|  | RSF   | MJ             | 1,07E-02 | 2,20E-03 | 5,04E-02 | 1,25E-04 | 6,49E-06 | 0,00E+00 | 1,18E-04 | 1,43E-04 | 9,08E-06 | -1,34E-03 |
|  | NRSF  | MJ             | 3,22E-03 | 7,92E-03 | 1,61E-01 | 4,17E-04 | 1,70E-05 | 0,00E+00 | 4,28E-04 | 0,00E+00 | 3,13E-04 | -8,82E-01 |
|  | FW    | m <sup>3</sup> | 3,31E-02 | 4,57E-04 | 1,42E-02 | 3,22E-05 | 5,18E-06 | 0,00E+00 | 2,29E-05 | 5,05E-04 | 1,31E-05 | -8,48E-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 materials; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Net use of fresh water

\*Reading example: 9,0 E-03 =  $9,0 \cdot 10^{-3} = 0,009$

\*INA Indicator Not Assessed

**End of life - Waste**

| Indicator                                                                         |      | Unit | A1       | A2       | A3       | A4       | A5       | C1       | C2       | C3       | C4       | D         |
|-----------------------------------------------------------------------------------|------|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
|  | HWD  | kg   | 2,43E-03 | 2,26E-04 | 1,04E-03 | 1,55E-05 | 0,00E+00 | 0,00E+00 | 1,06E-05 | 0,00E+00 | 2,35E-03 | -9,26E-05 |
|  | NHWD | kg   | 9,99E-02 | 2,04E-01 | 3,96E-02 | 2,46E-02 | 3,00E-02 | 0,00E+00 | 7,57E-03 | 0,00E+00 | 4,42E-02 | -4,91E-02 |
|  | RWD  | kg   | 1,38E-05 | 3,08E-05 | 1,56E-04 | 1,93E-06 | 0,00E+00 | 0,00E+00 | 1,29E-06 | 0,00E+00 | 7,78E-09 | -1,16E-05 |

HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed

"Reading example: 9,0 E-03 =  $9,0 \cdot 10^{-3}$  = 0,009"

\*INA Indicator Not Assessed

**End of life - Output flow**

| Indicator                                                                         |     |    | Unit     | A1       | A2       | A3       | A4       | A5       | C1       | C2       | C3       | C4       | D        |
|-----------------------------------------------------------------------------------|-----|----|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
|  | CRU | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
|  | MFR | kg | 3,70E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,53E-02 | 0,00E+00 | 0,00E+00 | 4,00E-02 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
|  | MER | kg | 8,24E-03 | 0,00E+00 | 1,25E-03 | 0,00E+00 | 1,50E-06 | 0,00E+00 | 0,00E+00 | 9,13E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
|  | EEE | MJ | 1,27E-02 | 0,00E+00 | 7,42E-04 | 0,00E+00 | 2,30E-06 | 0,00E+00 | 0,00E+00 | 1,61E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
|  | EET | MJ | 1,92E-01 | 0,00E+00 | 1,12E-02 | 0,00E+00 | 3,49E-05 | 0,00E+00 | 0,00E+00 | 2,43E+01 | 0,00E+00 | 0,00E+00 | 0,00E+00 |

CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported energy electrical; EET = Exported energy thermal

"Reading example: 9,0 E-03 =  $9,0 \cdot 10^{-3}$  = 0,009"

\*INA Indicator Not Assessed

**Biogenic Carbon Content**

| Indicator                                         | Unit | At the factory gate |
|---------------------------------------------------|------|---------------------|
| Biogenic carbon content in product                | kg C | 0,00E+00            |
| Biogenic carbon content in accompanying packaging | kg C | 0,00E+00            |

Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>

## Additional requirements

### Greenhouse gas emissions from the use of electricity in the manufacturing phase

National production mix from import, low voltage (production of transmission lines, in addition to direct emissions and losses in grid) of applied electricity for the manufacturing process (A3).

| Electricity mix            | Source        | Amount | Unit                      |
|----------------------------|---------------|--------|---------------------------|
| Electricity, Finland (kWh) | ecoinvent 3.6 | 255,20 | g CO <sub>2</sub> -eq/kWh |

### Dangerous substances

The product contains no substances given by the REACH Candidate list.

### Indoor environment

## Additional Environmental Information

| Additional environmental impact indicators required in NPCR Part A for construction products |                        |          |          |          |          |          |          |          |          |          |           |
|----------------------------------------------------------------------------------------------|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Indicator                                                                                    | Unit                   | A1       | A2       | A3       | A4       | A5       | C1       | C2       | C3       | C4       | D         |
| GWPIOBC                                                                                      | kg CO <sub>2</sub> -eq | 2,50E+00 | 3,02E-01 | 4,79E+00 | 1,74E-02 | 2,38E-03 | 0,00E+00 | 1,29E-02 | 2,91E+00 | 5,00E-04 | -3,14E-01 |

GWPIOBC: Global warming potential calculated according to the principle of instantaneous oxidation. In order to increase the transparency of biogenic carbon contribution to climate impact, the indicator GWP-IOBC is required as it declares climate impacts calculated according to the principle of instantaneous oxidation. GWP-IOBC is also referred to as GWP-GHG in context to Swedish public procurement legislation.

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