



# ENVIRONMENTAL PRODUCT DECLARATION

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

## ISOVER Insulsafe Blowing wool

**Version 2**

**Version date: 2025/10/13**

**Validity: 5 years**

**Valid until: 2029/07/30**

**Scope of the EPD®: Finland,  
Denmark & Baltics**



THE INTERNATIONAL EPD® SYSTEM

The International EPD® System

Program operator: EPD international AB

Registration number: EPD-IES-0015175



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](http://www.environdec.com)

## Programme information

**Programme:** The International EPD® System  
**Address:** EPD International AB - Box 210 60 - SE-100 31 Stockholm - Sweden  
**Website:** [www.environdec.com](http://www.environdec.com)  
**E-mail:** [info@environdec.com](mailto:info@environdec.com)

CEN standard EN 15804:2012 + A2:2019/AC:2021 serves as the Core Product Category Rules (PCR)

**Product category rules (PCR):** PCR 2019:14 Construction Products, version 1.3.2

**Complementary PCR:** (c-PCR-005), 2024-04-30. Thermal insulation products (EN 16783:2017)

**PCR review was conducted by:** The Technical Committee of the International EPD System. See [www.environdec.com](http://www.environdec.com) for a list of members.

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

EPD verification by individual verifier

**Third Party verifier :** Martin Erlandsson, CarbonZero,  
[martin.erlandsson@CarbonZero.se](mailto:martin.erlandsson@CarbonZero.se)



**Approved by :** The International EPD® System

**Procedure for follow-up of data during EPD validity involves third part verifier:**  Yes  No

EPDs within the same product category but registered in different EPD programmes may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same version number up to the first two digits) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical DU/FU); 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 characterization factors); have equivalent content declarations; and be valid at the time of Comparison. For further information about comparability, see EN 15804:2012+A2:2019/AC:2021 and ISO 14025:2006.

## Product information

**Product name:** ISOVER Insulsafe Blowing wool

**Functional unit:** 1 m<sup>2</sup> of product with a thermal resistance of 1 K.m<sup>2</sup>.W<sup>-1</sup> and a thickness of 39 mm

**UN CPC CODE:** 37990 Non-metallic mineral products n.e.c. (including mineral wool, expanded mineral materials, worked mica, articles of mica, non-electrical articles of graphite or other carbon and articles of peat)

## Company information

**Manufacturer:** Saint-Gobain Finland Oy, Strömberginkuja 2 (PL 70) FI-00381 Helsinki, Finland

**Website:** [www.saint-gobain.fi](http://www.saint-gobain.fi)

**Production plant:** Isover Hyvinkää, Finland

**Management system-related certification:** DS/EN ISO 9001, DS/EN ISO 14001

## LCA & EPD Information

**Owner of the declaration:** Saint-Gobain Finland Oy

**Contact person:** Anne Kaiser ([anne.kaiser@saint-gobain.com](mailto:anne.kaiser@saint-gobain.com))

**EPD<sup>®</sup> prepared by:** Päivi Pesu ([paivi.pesu@saint-gobain.com](mailto:paivi.pesu@saint-gobain.com))

**Type of EPD:** Cradle-to-grave and module D

**Geographical scope of the EPD<sup>®</sup>:** Finland, Denmark and Baltic countries

**Year of data collection:** 2023

## Product description

### Product description and description of use

This Environmental Product Declaration (EPD®) describes the environmental impacts of 1 m<sup>2</sup> of glass wool with a thermal resistance of 1 K.m<sup>2</sup>.W<sup>-1</sup> of ISOVER Insulsafe Blowing wool. To calculate the impact of the range of thicknesses between 39 mm and 600 mm and other blown densities 15-29 kg/m<sup>3</sup>, see the table "Conversion to mass and to specific thicknesses" in Additional information section.

ISOVER InsulSafe® Blowing wool is loose glass wool insulation. It is suitable for thermal insulation of both new buildings and additional thermal insulation of old buildings.

**For more information:** [www.isover.fi/tuotteet/isover-insulsafe-puhallusvilla](http://www.isover.fi/tuotteet/isover-insulsafe-puhallusvilla)

This EPD applies for one specific product produced in one plant of Saint-Gobain Finland Oy. The production site of Hyvinkää use mineral raw materials, recycled glass cullet, and fusion and fiberizing techniques to produce glass wool. The products are obtained in the form of glass wool characterized with a soft and airy structure.

### Technical data/physical characteristics:

| Parameter            | Value / Description                                |
|----------------------|--|
| Thermal resistance   | 1 K.m <sup>2</sup> .W <sup>-1</sup> (UNE EN 12667) |
| Thermal conductivity | 0,039 W/(m·K) (UNE EN 12667)                       |
| Reaction to fire     | A1 (UNE EN 13501-1)                                |
| Density              | 16 kg/m <sup>3</sup>                               |

### Declaration of the main product components and/or materials

| Parameter                                | Value                        |
|--|------------------------------|
| Quantity for 1 m <sup>2</sup> of product | 0,624 kg of finished product |
| Thickness                                | 39 mm                        |
| Facing                                   | none                         |

Description of the main components and/or materials:

| Product components               | Weight (%)  | Post-consumer recycled material weight (%) | Pre-consumer recycled material weight (%) | Biogenic material weight- % and kg C/ FU |
|----------------------------------|-------------|--|---|--|
| Mineral materials                | 10 – 25 %   | 0 %  | 0 %                                       | 0% / 0 kg                                |
| Recycled glass (external cullet) | 75 %        | 61 %                                       | 14 %                                      | 0% / 0 kg                                |
| Binder                           | 1 – 5 %     | 0 %  | 0 %                                       | 0% / 0 kg                                |
| <b>Sum</b>                       | <b>100%</b> | <b>100%</b>                                | <b>100%</b>                               | <b>100%</b>                              |

| Packaging materials   | Weight (kg) | Weight-%<br>(vs the product) | Post-consumer<br>recycled material<br>weight (%) | Biogenic material,<br>weight- kg C /<br>product |
|-----------------------|-------------|------------------------------|--|---|
| Strech film (LDPE)    | <0,001 kg   | 0,1 %                        | 0 %  | 0 kg  |
| Packaging film (LDPE) | 0,008 kg    | 1,2 %                        | 10 %   | 0 kg  |
| Wooden pallet         | 0,013 kg    | 2,1 %                        | 0 %  | 0,006 kg  |

## Hazardous substances

At the date of issue of this declaration, there is no “Substance of Very High Concern” (SVHC) in concentration above 0,1% by weight, and neither do their packaging, following the European REACH regulation (Registration, Evaluation, Authorization and Restriction of Chemicals).

The verifier and the program operator do not make any claim nor have any responsibility of the legality of the product.

## LCA calculation information

| Parameter  | Value / Description  |
|--|--|
| <b>Type of EPD</b>                               | Cradle to grave and module D   |
| <b>Functional unit</b>                           | Providing a thermal insulation on 1 m <sup>2</sup> of product with a thermal resistance of 1 K.m <sup>2</sup> .W-1 and a thickness of 39 mm during 60 years  |
| <b>System boundaries</b>                         | Cradle to grave (A1 - A3, A4, A5, B1–B7, C1–C4) and module D   |
| <b>Reference service life (RSL)</b>              | The Reference Service Life (RSL) of the insulation product is 60 years, provided that the product is installed correct into the building. This 60-year value is the amount of time that we recommend our products last for without refurbishment and corresponds to standard building design life.   |
| <b>Cut-off rules</b>                             | <p>All data is available, no cut-off rules has been applied.</p> <p>In the case that there is not enough information, the process energy and materials representing less than 1% of the whole energy and mass used can be excluded (if they do not cause significant impacts). The addition of all the inputs and outputs excluded cannot be bigger than the 5% of the whole mass and energy used, as well of the emissions to environment occurred.</p> <p>Flows related to human activities such as employee transport are excluded.</p> <p>The construction of plants, production of machines and transportation systems are excluded since the related flows are supposed to be negligible compared to the production of the building product when compared at these systems lifetime level.</p> |
| <b>Allocations</b>                               | <p>Allocation has been avoided when possible and when not possible a mass allocation has been applied.</p> <p>The polluter pays and the modularity principles as well have been followed.</p>  |
| <b>Geographical coverage<br/>And time period</b> | <p>Scope: Finland, Denmark and Baltics</p> <p>Data is collected from 1 production site located in Finland</p> <p>Data collected for the year 2023</p>  |
| <b>Background data source<br/>Software</b>       | <p>The databases Sphera 2023.2 and ecoinvent v.3.9.1</p> <p>Sphera LCA for experts (GaBi) 10</p>   |

## LCA scope

|                                 | Product stage       |           |               | Construction stage |                                   | Use stage |             |        |             |               |                        |                       | End of life stage          |               |                  |               | Benefits and loads beyond the system boundary |
|---------------------------------|---------------------|-----------|---------------|--------------------|-----------------------------------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|---------------|------------------|---------------|---|
|                                 | Raw material supply | Transport | Manufacturing | Transport          | Construction-Installation process | Use       | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport     | Waste processing | Disposal      | Reuse-recovery                                |
| 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      | X           | X             | X                      | X                     | X                          | X             | X                | X             | X   |
| Geography                       | GLO                 | GLO       | FIN           | FIN & Baltics      | EU-27                             | -         | -           | -      | -           | -             | -                      | -                     | GLO                        | FIN & Baltics | FIN & Baltics    | FIN & Baltics | EU-27   |
| Specific data used <sup>1</sup> | >59% GWP- GHG       |           |               |                    |                                   |           |             |        |             |               |                        |                       |                            |               |                  |               |   |
| Variation products              | 0%                  |           |               |                    |                                   |           |             |        |             |               |                        |                       |                            |               |                  |               |   |
| Variation sites                 | 0%                  |           |               |                    |                                   |           |             |        |             |               |                        |                       |                            |               |                  |               |   |

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

## Life cycle stages



<sup>1</sup> For this study, specific data is considered as energy and water consumptions, wastes and emissions related to the manufacturing process.

## A1-A3, Product stage

The product stage of the glass wool products is subdivided into 3 modules:

### A1, Raw materials supply

This module includes the extraction and transformation of raw materials.

### A2, Transport to the manufacturer

This module includes the transportation of raw materials and packaging to the manufacturing site. The modelling includes road, ship and/or train transportations.

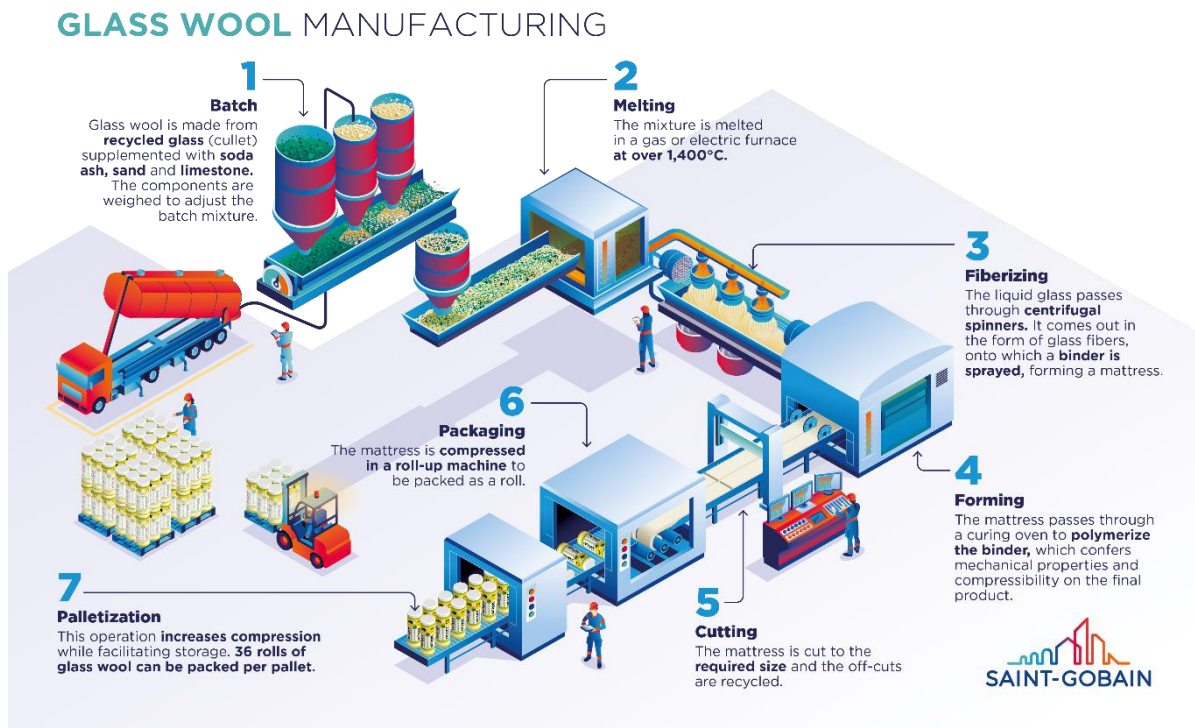
### A3, Manufacturing

This module includes the manufacture of products such as (fusion, fiberizing, etc) and the manufacture of packaging. The production of packaging material is considered at this stage. The processing of any waste arising from this stage is also included.

During the manufacturing process, electricity based on 100% fossil free electricity bought with Guarantee of Origin (GO) has been used. The amount of electricity purchases with GO's correspond to 100% of the electricity consumed at the manufacturing site, leaving 0% to be covered by national grid mix.

## Manufacturing process flow diagram

System diagram:



### Manufacturing in detail:

Glass wool is made from high-temperature molten glass that is blown away using centrifugal force to form fine cotton-like fibers. Then, a binder is sprayed on the material to form it, and the product is heated in an oven. Hereafter, the product is packed.

## A4-A5, Construction process stage

The construction process is divided into 2 modules:

**A4, Transport to the building site:** This module includes transport from the production gate to the building site. Transport is calculated based on a scenario with the parameters described in the following table.

| Parameter  | Value / Description   |
|--|---|
| <b>Fuel type and consumption of vehicle or vehicle type used for transport e.g., long distance truck, boat, etc.</b> | Freight truck, maximum load weight of 27 t and consumption of 0,38 liters diesel per km.<br>Real 21 t payload |
| <b>Distance</b>  | 170 km by truck   |
| <b>Capacity utilization (including empty returns)</b>  | 100% of the capacity in volume<br>60% of the capacity in weight<br>30% of empty returns                       |
| <b>Bulk density of transported products</b>  | 16 kg/m <sup>3</sup>  |

**A5, Installation in the building:** This module includes the installation of the product using blowing wool machine.

| Parameter   | Value / Description  |
|---|--|
| <b>Energy for installation</b>  | 0,0756 MJ/kg product of electricity  |
| <b>Electricity description</b>  | Market for electricity, global, 2023.  |
| <b>Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)</b>   | 2% for product<br>100% for packaging   |
| <b>Output materials (specified by type) as results of waste processing at the building site e.g., of collection for recycling, for energy recovering, disposal (specified by route)</b> | Product waste: 100 % to landfill<br>Pallet & LDPE: 53% to recycling, 41% to landfill, 6% recovery to energy<br>Other packaging: 100% to landfill |
| <b>Use of pallet</b>  | Re-used 7 times before End-of-life   |
| <b>Distance to waste treatment facilities</b>   | 50 km to landfill by truck<br>50 km to recycling by truck  |
| <b>Direct emissions to ambient air, soil, and water</b>   | None   |

The transport of waste is modelled as in C2.

## B1-B7, Use stage (excluding potential savings)

The use stage is divided into the following modules:

- **B1:** Use
- **B2:** Maintenance
- **B3:** Repair
- **B4:** Replacement
- **B5:** Refurbishment
- **B6:** Operational energy use
- **B7:** Operational water use

The product has a reference service life of 60 years. This assumes that the product will last in situ with no requirements for maintenance, repair, replacement, or refurbishment throughout this period. Therefore, it has no impact at this stage.

## C1-C4, End of Life Stage

This stage includes the following modules:

- **C1:** The de-construction and/or dismantling of the product takes part of the demolition of the entire building.
- **C2:** Transport to waste processing
- **C3:** Waste processing for reuse, recovery and/or recycling
- **C4:** Waste disposal, including physical pre-treatment and site management.

### Description of the scenarios and additional technical information for the end of life:

| Parameter  | Value / Description   |
|--|---|
| Energy for demolition                                      | 0,045 MJ/kg product of diesel   |
| Collection process specified by type                       | The entire product 0,624 kg of glass wool is collected with mixed construction waste  |
| Recovery system specified by type                          | There is no recovery, recycling or reuse of the product once it has reached its end-of-life phase.  |
| Disposal specified by type                                 | 0,624 kg of product is landfilled   |
| Assumptions for scenario development (e.g. transportation) | The waste going to landfill will be transported by truck with 24 t payload, consuming 0,38 liters diesel per km.<br>Transport distance to landfill: 50 km |

## D, Reuse/recovery/recycling potential

100% of product waste is considered landfilled. Reuse, recycling, and/or incineration with energy recovery is considered for the packaging. Therefore, benefits or loads reported on stage D are due to the packaging.

## LCA results

As specified in EN 15804:2012+A2:2019/AC:2021 and the Product Category Rules, the environmental impacts are declared and reported using the baseline characterization factors from the ILCD. Raw materials and energy consumption, as well as transport distances have been taken directly from the manufacturing plant. Characterization factors of EN15804 are based on EF 3.1.

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.








All emissions to air, water, and soil, and all materials and energy used have been included.

The results of the impact categories abiotic depletion of minerals and metals, land use, human toxicity (cancer), human toxicity, noncancer and ecotoxicity (freshwater) may be highly uncertain in LCAs that include capital goods/infrastructure in generic datasets, in case infrastructure/capital goods contribute greatly to the total results. This is because the LCI data of infrastructure/capital goods used to quantify these indicators in currently available generic datasets sometimes lack temporal, technological and geographical representativeness. Caution should be taken when using the results of these indicators for decision-making purposes.

Since this EPD includes module C, we strongly advise not to use the results of modules A1-A3 without considering the results of module C.











All results refer to a functional unit of 1 m<sup>2</sup> of glass wool with thermal resistance of 1 K.m<sup>2</sup>.W<sup>-1</sup> for a thickness of 39 mm. To obtain results with different commercial thicknesses see Additional information section.

## Environmental Impacts

| Environmental indicators  |  | PRODUCT STAGE | CONSTRUCTION STAGE |                 | USE STAGE |                |           |                |                  |                           |                          | END OF LIFE STAGE              |              |                     |             | BENEFITS AND LOADS BEYOND THE LIFE CYCLE |
|---|--|---------------|--------------------|-----------------|-----------|----------------|-----------|----------------|------------------|---------------------------|--------------------------|--------------------------------|--------------|---------------------|-------------|--|
|   |  | A1 / A2 / A3  | A4 Transport       | A5 Installation | B1 Use    | B2 Maintenance | B3 Repair | B4 Replacement | B5 Refurbishment | B6 Operational energy use | B7 Operational water use | C1 Deconstruction / demolition | C2 Transport | C3 Waste processing | C4 Disposal | D Reuse, recovery, recycling             |
|    | Climate Change [kg CO <sub>2</sub> eq.]                                | 4,17E-01      | 8,05E-03           | 4,75E-02        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 4,47E-03                       | 2,27E-03     | 0                   | 1,27E-02    | -6,96E-03                                |
|   | Climate Change (fossil) [kg CO <sub>2</sub> eq.]                       | 4,30E-01      | 7,95E-03           | 2,70E-02        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 4,47E-03                       | 2,25E-03     | 0                   | 9,24E-03    | -7,05E-03                                |
|   | Climate Change (biogenic) [kg CO <sub>2</sub> eq.]                     | -1,23E-02     | 2,11E-05           | 2,04E-02        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 5,63E-07                       | 6,01E-06     | 0                   | 3,42E-03    | 9,29E-05                                 |
|   | Climate Change (land use change) [kg CO <sub>2</sub> eq.]              | 2,77E-04      | 7,48E-05           | 3,90E-05        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 5,03E-07                       | 2,07E-05     | 0                   | 2,91E-05    | -2,66E-06                                |
|    | Ozone depletion [kg CFC-11 eq.]  | 5,75E-07      | 7,07E-16           | 1,16E-08        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 7,10E-11                       | 2,91E-16     | 0                   | 2,38E-14    | -3,80E-11                                |
|    | Acidification terrestrial and freshwater [Mole of H <sup>+</sup> eq.]  | 1,35E-03      | 9,32E-06           | 1,06E-04        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 4,14E-05                       | 2,84E-06     | 0                   | 6,65E-05    | -2,74E-05                                |
|    | Eutrophication freshwater [kg P eq.]                                   | 2,65E-05      | 2,94E-08           | 7,47E-06        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 1,37E-07                       | 8,16E-09     | 0                   | 1,89E-08    | -1,12E-06                                |
|   | Eutrophication marine [kg N eq.]                                       | 3,69E-04      | 3,22E-06           | 2,65E-05        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 1,92E-05                       | 9,96E-07     | 0                   | 1,72E-05    | -3,99E-06                                |
|   | Eutrophication terrestrial [Mole of N eq.]                             | 4,05E-03      | 3,79E-05           | 2,49E-04        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 2,09E-04                       | 1,16E-05     | 0                   | 1,89E-04    | -4,80E-05                                |
|  | Photochemical ozone formation - human health [kg NMVOC eq.]            | 1,01E-03      | 8,11E-06           | 7,09E-05        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 6,18E-05                       | 2,49E-06     | 0                   | 5,18E-05    | -3,42E-05                                |
|  | Resource use, mineral and metals [kg Sb eq.] <sup>2</sup>              | 2,41E-05      | 5,24E-10           | 5,02E-07        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 1,56E-09                       | 1,48E-10     | 0                   | 4,33E-10    | -2,15E-08                                |
|   | Resource use, energy carriers [MJ] <sup>2</sup>                        | 2,05E+01      | 1,10E-01           | 6,69E-01        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 5,83E-02                       | 3,04E-02     | 0                   | 1,25E-01    | -3,01E-01                                |
|  | Water deprivation potential [m <sup>3</sup> world equiv.] <sup>2</sup> | 1,96E-01      | 9,30E-05           | 8,78E-03        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 1,97E-04                       | 2,70E-05     | 0                   | 1,03E-03    | -4,69E-03                                |









<sup>2</sup> 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.

## Resources Use


| Resources Use indicators   | PRODUCT STAGE | CONSTRUCTION STAGE |                 | USE STAGE |                |           |                |                  |                           |                          | END OF LIFE STAGE              |              |                     |             | BENEFITS AND LOADS BEYOND THE LIFE CYCLE |
|--|---------------|--------------------|-----------------|-----------|----------------|-----------|----------------|------------------|---------------------------|--------------------------|--------------------------------|--------------|---------------------|-------------|--|
|  | A1 / A2 / A3  | A4 Transport       | A5 Installation | B1 Use    | B2 Maintenance | B3 Repair | B4 Replacement | B5 Refurbishment | B6 Operational energy use | B7 Operational water use | C1 Deconstruction / demolition | C2 Transport | C3 Waste processing | C4 Disposal | D Reuse, recovery, recycling             |
|  Use of renewable primary energy (PERE) [MJ] <sup>3</sup>                               | 1,92E-01      | 7,77E-03           | 2,85E-02        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 3,33E-04                       | 2,21E-03     | 0                   | 2,03E-02    | -4,89E-03                                |
|  Renewable primary energy resources used as raw materials (PERM) [MJ] <sup>3</sup>      | 2,05E-01      | 0                  | -1,87E-01       | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 0                              | 0            | 0                   | 0           | 0  |
|  Total use of renewable primary energy resources (PERT) [MJ] <sup>3</sup>               | 3,97E-01      | 7,77E-03           | -1,59E-01       | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 3,33E-04                       | 2,21E-03     | 0                   | 2,03E-02    | -4,89E-03                                |
|  Use of non-renewable primary energy (PENRE) [MJ] <sup>2</sup>                          | 2,01E+01      | 1,10E-01           | 6,62E-01        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 5,83E-02                       | 3,05E-02     | 0                   | 1,25E-01    | -3,01E-01                                |
|  Non-renewable primary energy resources used as raw materials (PENRM) [MJ] <sup>3</sup> | 4,12E-01      | 0                  | -1,95E-01       | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 0                              | 0            | 0                   | 0           | 0  |
|  Total use of non-renewable primary energy resources (PENRT) [MJ] <sup>3</sup>         | 2,05E+01      | 1,10E-01           | 4,67E-01        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 5,83E-02                       | 3,05E-02     | 0                   | 1,25E-01    | -3,01E-01                                |
|  Input of secondary material (SM) [kg]  | 4,95E-01      | 0                  | 9,89E-03        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 0                              | 0            | 0                   | 0           | 0  |
|  Use of renewable secondary fuels (RSF) [MJ]  | 0             | 0                  | 0               | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 0                              | 0            | 0                   | 0           | 0  |
|  Use of non-renewable secondary fuels (NRSF) [MJ]                                     | 0             | 0                  | 0               | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 0                              | 0            | 0                   | 0           | 0  |
|  Use of net fresh water (FW) [m <sup>3</sup> ]  | 4,67E-03      | 8,56E-06           | 2,07E-04        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 4,59E-06                       | 2,42E-06     | 0                   | 3,15E-05    | -1,09E-04                                |

<sup>3</sup> From EPD International Construction Product PCR 1.3.2 (Annex 3). The option B was retained to calculate the primary energy use indicators.


## Waste Category & Output flows

| Waste Category & Output Flows   | Product stage | Construction stage |                 | Use stage |                |           |                |                  |                           |                          | End of life stage              |              |                     |             | Benefits and loads beyond the life cycle |
|---|---------------|--------------------|-----------------|-----------|----------------|-----------|----------------|------------------|---------------------------|--------------------------|--------------------------------|--------------|---------------------|-------------|--|
|   | A1 / A2 / A3  | A4 Transport       | A5 Installation | B1 Use    | B2 Maintenance | B3 Repair | B4 Replacement | B5 Refurbishment | B6 Operational energy use | B7 Operational water use | C1 Deconstruction / demolition | C2 Transport | C3 Waste processing | C4 Disposal | D Reuse, recovery, recycling             |
|  Hazardous waste disposed (HWD) [kg]       | 1,14E-04      | 4,07E-13           | 2,64E-06        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 3,94E-07                       | 9,45E-14     | 0                   | 2,72E-12    | -3,10E-08                                |
|  Non-hazardous waste disposed (NHWD) [kg]  | 1,37E-01      | 1,59E-05           | 3,44E-02        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 3,60E-04                       | 4,65E-06     | 0                   | 6,25E-01    | -3,18E-04                                |
|  Radioactive waste disposed (RWD) [kg]     | 4,94E-03      | 1,42E-07           | 9,94E-05        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 6,41E-09                       | 5,71E-08     | 0                   | 1,42E-06    | -1,46E-07                                |
|  Components for re-use (CRU) [kg]          | 0             | 0                  | 1,27E-02        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 0                              | 0            | 0                   | 0           | 0  |
|  Materials for Recycling (MFR) [kg]       | 5,94E-03      | 0                  | 5,63E-03        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 0                              | 0            | 0                   | 0           | 0  |
|  Material for Energy Recovery (MER) [kg] | 0             | 0                  | 6,23E-04        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 0                              | 0            | 0                   | 0           | 0  |
|  Exported electrical energy (EEE) [MJ]   | 0             | 0                  | 3,65E-03        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 0                              | 0            | 0                   | 0           | 0  |
|  Exported thermal energy (EET) [MJ]      | 0             | 0                  | 6,50E-03        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 0                              | 0            | 0                   | 0           | 0  |

## Supplementary indicator for climate impact (according to PCR)

| Environmental indicators   | Product stage | Construction stage |                 | Use stage |                |           |                |                  |                       |                          | End of life stage              |              |                     |             | Benefits and loads beyond the life cycle |
|--|---------------|--------------------|-----------------|-----------|----------------|-----------|----------------|------------------|-----------------------|--------------------------|--------------------------------|--------------|---------------------|-------------|--|
|  | A1 / A2 / A3  | A4 Transport       | A5 Installation | B1 Use    | B2 Maintenance | B3 Repair | B4 Replacement | B5 Refurbishment | B6 Operational energy | B7 Operational water use | C1 Deconstruction / demolition | C2 Transport | C3 Waste processing | C4 Disposal | D Reuse, recovery, recycling             |
|  GWP-GHG / GWP-IOBC [kg CO <sub>2</sub> eq.] <sup>4</sup> | 4,51E-01      | 8,05E-03           | 2,74E-02        | 0         | 0              | 0         | 0              | 0                | 0                     | 0                        | 4,47E-03                       | 2,27E-03     | 0                   | 9,32E-03    | -6,95E-03                                |

## Information on biogenic carbon content

| Biogenic Carbon Content   |  | At factory gate |
|---|--|-----------------|
|   |  | A1 / A2 / A3    |
|  Biogenic carbon content in product [kg]     |  | 0               |
|  Biogenic carbon content in packaging [kg] |  | 5,58E-03        |

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

The packaging contains biogenic carbon due to wooden pallet.

<sup>4</sup> 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 CO<sub>2</sub> is set to zero.

## Additional information

### Conversion to mass and to specific thicknesses

This EPD® includes a range of thicknesses between 39 mm and 600 mm by applying a conversion factor. All the results of this EPD® refer to the reference thickness of 39 mm with a value of  $R=1 \text{ K.m}^2.\text{W}^{-1}$ .

The product can be blown in various thicknesses and densities to achieve desired thermal resistance. To convert the results of all indicators of all modules to other thicknesses, the results expressed in this EPD must be multiplied by its corresponding conversion factor in the table below. Conversion factors per  $1\text{m}^2$  for thicknesses not listed below can be calculated as product thickness (m) x product density ( $\text{kg/m}^3$ ) / FU weight per  $\text{m}^2$  ( $\text{kg/m}^2$ ) as they scale linearly. For example conversion factor for 100 mm thick product with density of  $15 \text{ kg/m}^3$ :  $0,1 \times 15 / 0,624$ .

To convert the results per 1 kg of product can be done by using conversion to mass (kg): 1,603.

| Blown thickness (mm) | $\lambda 0,039$<br>(16 $\text{kg/m}^3$ ) | $\lambda 0,041$<br>(15 $\text{kg/m}^3$ ) | $\lambda 0,036$<br>(23 $\text{kg/m}^3$ ) | $\lambda 0,034$<br>(29 $\text{kg/m}^3$ ) |
|----------------------|--|--|--|--|
| 39                   | --                                       | 0,9                                      | 1,4                                      | 1,8                                      |
| 50                   | 1,3                                      | 1,2                                      | 1,8                                      | 2,3                                      |
| 100                  | 2,6                                      | 2,4                                      | 3,7                                      | 4,6                                      |
| 200                  | 5,1                                      | 4,8                                      | 7,4                                      | 9,3                                      |
| 300                  | 7,7                                      | 7,2                                      | 11,1                                     | 13,9                                     |
| 400                  | 10,3                                     | 9,6                                      | 14,7                                     | 18,6                                     |
| 500                  | 12,8                                     | 12,0                                     | 18,4                                     | 23,2                                     |
| 600                  | 15,4                                     | 14,4                                     | 22,1                                     | 27,9                                     |

## Electricity information

The electricity used during the manufacturing (A3) is based on the following:

| Parameter   | Value / Description  |
|---|--|
| <b>Location</b>   | Electricity purchased by Saint-Gobain Finland Oy   |
| <b>Share of electricity covered by Guarantee of Origin</b>  | 100% of the electricity consumption is covered by the GO<br>0% of electricity consumption is covered by residual mix |
| <b>Geographical representativeness description</b>  | Split of electricity bought with Guarantee of Origin:<br>Nuclear power 100 %   |
| <b>Reference year</b>   | For GO: 2025<br><i>The GO will be prolonged to be valid at least to the validity of this EPD.</i>                    |
| <b>Type of dataset</b>  | Cradle to gate from Sphera and ecoinvent databases   |
| <b>Source</b>   | Guarantee of Origin: Sphera dataset (2023) and Entelios  |
| <b>CO<sub>2</sub> emission (kg CO<sub>2</sub> eq. / kWh)<br/>(Based on Climate Change Fossil Indicator)</b> | Guarantee of Origin: 0,0046 kg of CO <sub>2</sub> eq /kWh  |

## Indoor Environment

The product has a M1 certificate. Certificate number: 18.08.2025: 4736.

## Transport to other countries

The transport to building site (module A4) in the main result is based on Finland. For transport to other countries per functional unit, additional sets of results are provided below, based on the following data:

| Country   | Truck (km) | Ship (km) |
|-----------|------------|-----------|
| Estonia   | 115        | 90        |
| Latvia    | 429        | 90        |
| Lithuania | 715        | 90        |
| Denmark   | 1010       | 400       |

|   | ESTONIA      | LATVIA       | LITHUANIA    | DENMARK      |
|---|--------------|--------------|--------------|--------------|
| Module:   | A4 Transport | A4 Transport | A4 Transport | A4 Transport |
| <b>Environmental indicators</b>   |              |              |              |              |
| Climate Change [kg CO2 eq.]   | 6,18E-03     | 2,10E-02     | 3,46E-02     | 5,11E-02     |
| Climate Change (fossil) [kg CO2 eq.]                                      | 6,12E-03     | 2,08E-02     | 3,42E-02     | 5,05E-02     |
| Climate Change (biogenic) [kg CO2 eq.]                                    | 1,48E-05     | 5,37E-05     | 8,92E-05     | 1,28E-04     |
| Climate Change (land use change) [kg CO2 eq.]                             | 5,06E-05     | 1,89E-04     | 3,14E-04     | 4,44E-04     |
| Ozone depletion [kg CFC-11 eq.]   | 5,29E-16     | 1,83E-15     | 3,02E-15     | 4,42E-15     |
| Acidification terrestrial and freshwater [Mole of H+ eq.]                 | 3,22E-05     | 4,94E-05     | 6,51E-05     | 1,70E-04     |
| Eutrophication freshwater [kg P eq.]                                      | 2,01E-08     | 7,45E-08     | 1,24E-07     | 1,76E-07     |
| Eutrophication marine [kg N eq.]  | 8,26E-06     | 1,42E-05     | 1,96E-05     | 4,62E-05     |
| Eutrophication terrestrial [Mole of N eq.]                                | 9,23E-05     | 1,62E-04     | 2,26E-04     | 5,21E-04     |
| Photochemical ozone formation - human health [kg NMVOC eq.]               | 2,28E-05     | 3,78E-05     | 5,14E-05     | 1,25E-04     |
| Resource use, mineral and metals [kg Sb eq.]                              | 3,61E-10     | 1,33E-09     | 2,21E-09     | 3,15E-09     |
| Resource use, energy carriers [MJ]  | 8,33E-02     | 2,86E-01     | 4,71E-01     | 6,92E-01     |
| Water deprivation potential [m³ world equiv.]                             | 6,42E-05     | 2,36E-04     | 3,93E-04     | 5,58E-04     |
| <b>Resource Use Indicators</b>  |              |              |              |              |
| Use of renewable primary energy (PERE) [MJ]                               | 5,30E-03     | 1,96E-02     | 3,27E-02     | 4,63E-02     |
| Primary energy resources used as raw materials (PERM) [MJ]                | 0            | 0            | 0            | 0            |
| Total use of renewable primary energy resources (PERT) [MJ]               | 5,30E-03     | 1,96E-02     | 3,27E-02     | 4,63E-02     |
| Use of non-renewable primary energy (PENRE) [MJ]                          | 8,35E-02     | 2,87E-01     | 4,72E-01     | 6,94E-01     |
| Non-renewable primary energy resources used as raw materials (PENRM) [MJ] | 0            | 0            | 0            | 0            |
| Total use of non-renewable primary energy resources (PENRT) [MJ]          | 8,35E-02     | 2,87E-01     | 4,72E-01     | 6,94E-01     |
| Input of secondary material (SM) [kg]                                     | 0            | 0            | 0            | 0            |
| Use of renewable secondary fuels (RSF) [MJ]                               | 0            | 0            | 0            | 0            |
| Use of non-renewable secondary fuels (NRSF) [MJ]                          | 0            | 0            | 0            | 0            |
| Use of net fresh water (FW) [m3]  | 5,84E-06     | 2,17E-05     | 3,61E-05     | 5,11E-05     |
| <b>Waste category &amp; Output flows</b>                                  |              |              |              |              |
| Hazardous waste disposed (HWD) [kg]                                       | 3,04E-13     | 1,06E-12     | 1,74E-12     | 2,55E-12     |
| Non-hazardous waste disposed (NHWD) [kg]                                  | 1,16E-05     | 4,09E-05     | 6,75E-05     | 9,79E-05     |
| Radioactive waste disposed (RWD) [kg]                                     | 1,07E-07     | 3,70E-07     | 6,09E-07     | 8,93E-07     |
| Components for re-use (CRU) [kg]  | 0            | 0            | 0            | 0            |
| Materials for Recycling (MFR) [kg]  | 0            | 0            | 0            | 0            |
| Material for Energy Recovery (MER) [kg]                                   | 0            | 0            | 0            | 0            |
| Exported electrical energy (EEE) [MJ]                                     | 0            | 0            | 0            | 0            |
| Exported thermal energy (EET) [MJ]  | 0            | 0            | 0            | 0            |
| <b>Supplementary climate indicator</b>                                    |              |              |              |              |
| GWP-GHG / GWP-IOBC [kg CO2 eq.]   | 6,18E-03     | 2,11E-02     | 3,46E-02     | 5,11E-02     |

## Differences versus previous versions

**Version 1**, 2024/07/31. Original version.

**Version 2**, 2025/10/13. Updated results based on electricity mix change of manufacturing phase. Revised to include conversion factors for blown densities 15, 23 and 29 kg/m<sup>3</sup>, added Denmark in scope and updated M1 certificate number.

- All results of Environmental Impacts impacted by A3 electricity mix update.
- Updates done in: version date, geographical scope, product description (densities), table under *Conversion to mass and specific thicknesses*, tables under *Transport to other countries*, electricity mix under *Electricity Information* and information under *Indoor Environment*.

## References

1. ISO 14040:2006: Environmental Management-Life Cycle Assessment-Principles and framework.
2. ISO 14044:2006: Environmental Management-Life Cycle Assessment-Requirements and guidelines.
3. ISO 14025:2006: Environmental labels and Declarations-Type III Environmental Declarations-Principles and procedures.
4. EN 15804:2012+A2:2019/AC:2021 - Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
5. EN 16783:2017 Thermal insulation products - Product category rules (PCR) for factory made and in-situ formed products for preparing environmental product declarations, version 2024-04-30.
6. EPD International. General Program Instructions (GPI) for the International EPD® System (version 4.0) [www.environdec.com](http://www.environdec.com).
7. The International EPD System PCR 2019:14 Construction products and Construction services. Version 1.3.2
8. European Chemical Agency, Candidate List of substances of very high concern for Authorization. <https://echa.europa.eu/candidate-list-table>
9. Project report for the verification of the Environmental Product Declaration of insulation products, Saint-Gobain Finland Oy, 2024, revised 2025/10/13. LCA report-Insulation\_2024-06\_v2\_SGFinland\_revision 20251013.docx.