# Environmental Product Declaration

of multiple products, based on the average results of the product group. In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 for:

## *Acoustic panel*

from

**Suzhou Silent Hero New Materials Co., Ltd**

| | |
|---|---|
| Programme: | The International EPD System, www.environdec.com |
| Programme operator: | EPD International AB |
| Type of EPD | EPD of multiple products from a company |
| EPD registration number: | EPD-IES-0030222:001 |
| Version date: | 2026-05-20 |
| Validity date: | 2031-05-19 |

*An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com*

Acoustic panel consists of the following series of products:

- Acoustic panel 12 mm
- Acoustic panel 18 mm
- Acoustic panel 22 mm

# General information

| Programme information | |
|---|---|
| **Programme:** | The International EPD System |
| **Address:** | EPD International AB<br>Box 210 60<br>SE-100 31 Stockholm<br>Sweden |
| **Website:** | www.environdec.com |
| **E-mail:** | support@environdec.com |

| **Product Category Rules (PCR)** |
|---|
| CEN standard EN 15804 serves as the Core Product Category Rules (PCR) |
| Product Category Rules (PCR): Product Category Rules (PCR): *PCR 2019:14 PCR Construction products v2.0.1 issue data 2025-06-05 valid until 2030-04-07. The product group classification for the assessed products is UN CPC code 316.* |
| PCR review was conducted by: The Technical Committee of the International EPD System. A full list of members is available on www.environdec.com. The review panel may be contacted via support@environdec.com.<br>*Chair of the PCR review: Rob Rouwette (chair), Noa Meron (co-chair)* |
| **Life Cycle Assessment (LCA)** |
| LCA accountability: Ziyu Ma, SGS-CSTC Standard Technical Services Co., Ltd. |

| **Third-party verification** |
|---|
| Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:<br><br>☒ Individual EPD verification without a pre-verified LCA/EPD tool<br>Third-party verifier: Ying SU, freelance, China<br>Approved by: The International EPD System |
| Procedure for follow-up of data during EPD validity involves third party verifier:<br><br>☐ Yes ☒ No |

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025:2006.

## Company information

Owner of the EPD:
Suzhou Silent Hero New Materials Co., Ltd
Address: 4-4, Building B, Zhangjiagang Linjiang Green Technology Innovation Park, No.8 Lekun Road, Leyu Town, Zhangjiagang City, Jiangsu Province, China

Contact of the EPD owner:
Name: Sun yan
Tel: +86 15370386329
Email: grace@silentheropanel.com

Address and contact information of the LCA practitioner commissioned by the EPD owner:
Ziyu Ma (Oliver.ma@sgs.com), SGS-CSTC Standard Technical Services Co., Ltd.

Description of the organisation:
Silent Hero is founded by a dynamic, creative, experienced and responsible team, Everyone in the team is committed to providing our customers with the best products and services, as our name Silent Hero, we focus on manufacturing best quality acoustic architectural wooden panels to our clients in their interior decoration. We design, manufacture, and deliver, products that transform our clients thinking; Are globally recognized for their quality and environmental sustainability.

## Product information

Product name:
Acoustic panel

Product identification:
The acoustic panel is made from single-sided veneer MDF and PET acoustic panel

Visual representation of the product:

UN CPC code:
316

Product description:
Silent Hero Panel is an optimal solution for efficient sound absorption and lowering noise reverberation time. Combine the high-performing acoustical capabilities of PET felt with MDF and wood veneer. our acoustic panels are a direct response to ecological sustainability and environmental quality requirements facing contemporary interior design and fit out. Create a linear design that can carry from ceiling to wall. Installation is a snap - glue or screw directly to any existing ceiling or wall.
In addition, the product's brand is FIBROTECH, whose logotype is shown below.

Name and location of production site(s):
4-4, Building B, Zhangjiagang Linjiang Green Technology Innovation Park, No.8 Lekun Road, Leyu Town, Zhangjiagang City, Jiangsu Province, China

Content information:
The mass (weight) of one declared unit:
7.22 kg

Content of the product in the form of a list of materials and substances, and their mass:
Aligned with EN 15804:2012+A2:2021 and PCR 2019:14 Construction Products (v2.0.1), this EPD encompasses the entire Acoustic panel series. The composition presented in the table below is for 1 $m^2$ of Acoustic panel product with weighted average thickness (18.4 mm).

| Product components | Mass, kg | Post-consumer recycled material, mass-% of product | Biogenic material, mass-% of product | Biogenic material, kg C/declared unit |
|---|---|---|---|---|
| Wood panel | 5.75E+00 | 0 | 78 | 1.73E+00 |
| PET acoustic panel | 1.46E+00 | 0 | 0 | 0 |
| Staple | 1.96E-02 | 0 | 0 | 0 |
| Total | 7.22E+00 | 0 | 78 | 1.73E+00 |

| Packaging materials | Mass, kg | Mass-% (versus the product) | Biogenic material, kg C/declared unit |
|---|---|---|---|
| Corrugated board box | 7.86E-01 | 10.89% | 3.34E-01 |
| Packaging film | 5.51E-03 | 0.08% | 0.00E+00 |
| Packaging belt | 7.23E-03 | 0.10% | 0.00E+00 |
| Corner guards | 5.45E-02 | 0.75% | 2.32E-02 |
| TOTAL | 8.54E-01 | 11.82% | 3.58E-01 |

The raw material composition range of the product group (corresponding to one declared unit):

| Product components | Range Mass, kg |
|---|---|
| Wood panel | 3.22~7.03 |
| PET acoustic panel | 1.34~1.47 |
| Staple | 0.01~0.02 |
| Total | 4.69~8.39 |
| **Packaging materials** | **Weight, kg** |
| Corrugated board box | 0.72 ~ 0.80 |
| Packaging film | 0.01 |
| Packaging belt | 0.01 |
| Corner guards | 0.05 ~ 0.14 |
| Total | 0.82 ~ 0.96 |

Information on the environmental and hazardous/toxic properties of a substances contained in the product:
Products do not contain any of the substances of very high concern (SVHC) regulated by the Regulation (EC) No 1907/2006 (REACH) or the Regulation (EC) No 1272/2008 of European parliament.

Geographical scope:
A1-A3 China, A4 from China to DK, A5-D DK

## LCA information

Declared unit:
1 $m^2$ of Acoustic panel

The EPD is based on the average results of the product group with a weighted average thickness of 18.4 mm of Acoustic panel.

Conversion factor to mass: 7.22 kg

Reference service life:
50 years

Time representativeness:
2025-02-01 to 2026-01-31

Database(s) and LCA software used:
Database: Ecoinvent 3.11, Ecoinvent 3 - allocation, cut-off by classification - unit
LCA Software: Simapro 10.3.0.1

Description of system boundaries:
The system boundary of the study is based on the type b of EPD — cradle to gate with options, modules C1-C4, module D and with optional modules A4-A5 and modules B1-B7 (A1-A3 + C + D and additional modules)
A1-A3: Product stage (raw material acquisition, transport to manufacturing site and manufacturing)
A4-A5: Construction stage (transport to the building site and installation in the building)
B1-B7: Use stage (use, maintenance, repair, replacement, refurbishment, operational energy use and operational water use)
C1-C4: End-of-life stage (deconstruction, transport, waste processing and disposal)
D:Reuse/Recovery/Recycling stage

**Module A1-A3**

Most data used in A1-A3 were collected from the production site, i.e. 4-4, Building B, Zhangjiagang Linjiang Green Technology Innovation Park, No.8 Lekun Road, Leyu Town, Zhangjiagang City, Jiangsu Province, China. Following description is the manufacturing step of the products.

This production process follows a standardized four-step workflow—cutting, assembly, finishing, and packaging—to ensure efficient manufacturing and reliable product quality. First, in the cutting stage, single-sided wood veneer MDF boards are precisely cut into standard strips according to drawings, guaranteeing accurate dimensions and intact veneer surfaces. Next, during assembly, the cut strips are neatly arranged on acoustic panels and securely fixed using a staple gun to ensure structural stability. Then, in the finishing stage, wood chips and dust on the surface are thoroughly cleaned, and the products are strictly inspected to confirm there are no defects or looseness. Finally,

in the packaging stage, qualified finished products are placed into cartons, sealed, labeled, and then neatly stacked in the warehouse, completing the entire production process.

In this LCA, the grid mix data on electricity are based on grid mixes of the Grid Corporation of Eastern China (Electricity, low voltage {CN-ECGC}| market for electricity, low voltage | Cut-off, U). The reference year of the dataset is 2024. The climate impact of the energy source behind electricity in the manufacturing process in A3 is 0.78 kg $CO_2$ eq./kWh (using GWP-GHG indicator).

**Module A4-A5**

A4: Transport to the building site

The products are first transported by China V-standard lorries (load capacity: >32 tonnes) to the port of Shanghai, located 190 km from the factory. Then, the products are shipped to Denmark.

A5: Installation in the building

In this stage, it is assumed that products are installed manually in the building. During installation, approximately 5% of products are lost as off-cuts. The additional production processes to compensate for the loss are considered in this study, so the elementary flow with 5% waste should be 1.05 $m^2$ when the declared unit is defined as 1 $m^2$ of installed flooring. All flooring losses are collected for landfill disposal. And all flooring losses and the packaging of products are all collected for landfill disposal.

**Modules B1-B7**

The acoustic panels are passive products and therefore, there are no environmental impacts during the use phase.

**Modules C1-C4**

For the end-of-life (EoL) scenario of the Acoustic panel, the stages are described as follows:

C1:Demolition

According to the PCR, Demolition of the products spends 1.1 kwh diesel/tonne.

C2:Transportation to waste processing

The waste is assumed to be transported 130 km by road for incineration.

C3:Waste Processing

This module spent 7.8 kwh diesel/tonne and 2.2 kwh electricity/tonne products. All wastes were assumed to be incinerated.

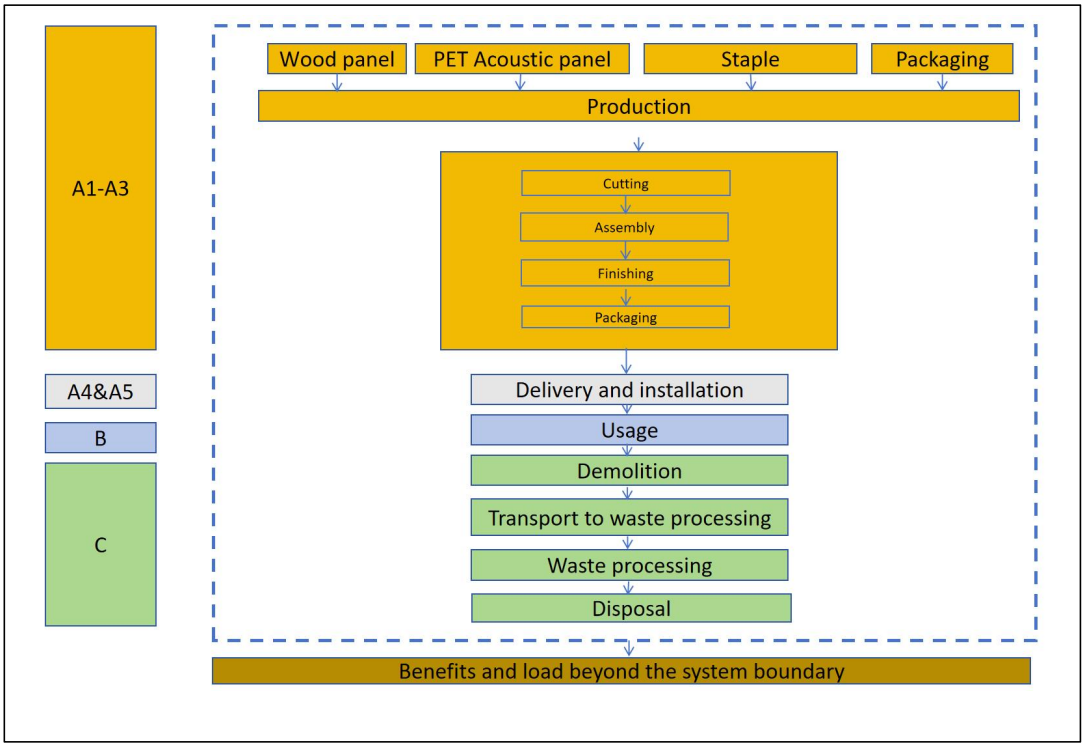
C4:Disposal

All wastes were incinerated.

**Module D**

100% of the products are assumed to be sent for incineration. No benefit or load resulting from reuse/ recovery/recycling beyond the product system boundary.

<u>System diagram:</u>




More information:

**Cut-off criteria**

Some processes are excluded according to the applicable PCR (PCR 2019: 14, construction products, version 2.0.1):

- Personnel-related processes, such as transportation of employees to and from work are excluded.
- The production and end-of-life processes of infrastructure or capital goods used in the product system are excluded since it has no evidence that it is of relevance in terms of environmental impact.

Material and energy flows known to have the potential to cause significant emissions into air and water or soil related to the environmental indicators of this study will be included in the assessment. According to PCR, LCI data shall according to EN 15804 include a minimum of 99% of total inflows (mass and energy) per unit process and 95% of total inflows (mass and energy) per life-cycle stages A1-A3, A4-A5 and C1-C4, aggregated modules B1-B5 and B6-B7, and module D. In addition, at least 95% of the environmental impact per such aggregated module shall be included.

The study does not exclude any modules or processes that are stated mandatory in EN 15804:2012+A2:2019 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, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy usage or mass.

This study strictly follows the cut-off rules. No cut-off rule is applied in this study.

**Data sources and quality assessment summary of the study:**

| Process | Source type | Source | Reference year | Data category | Share of primary data, of GWP-GHG results for A1-A3 |
|---|---|---|---|---|---|
| Manufacturing of product | Collected data | EPD owner | 2025 ~ 2026 | Primary data | 0.00% |
| Generation of electricity used in manufacturing of product | Databse | Ecoinvent v3.11 | 2024 | Primary data | 8.62% |
| Transport of inert wastes to waste treatment center | Collected data | EPD owner | 2024 | Primary data | 0.07% |
| Tansport of all raw materials to manufacturing site | Collected data | EPD owner | 2024 | Primary data | 5.39% |
| Production of raw materials | Database | Ecoinvent v3.11 | 2024 | Secondary data | 0.00% |
| Treatment of wastes | Database | Ecoinvent v3.11 | 2024 | Secondary data | 0.00% |
| Total share of primary data,of GWP-GHG results for A1-A3 | | | | | 14.08% |

As generic data is adopted in this study, a data quality assessment was conducted according to ISO 14044:2006 and EN 15804:2012+A2:2019/AC:2021. All primary data were collected from Feb., 2025 to Jan., 2026. All background data comes from Ecoinvent database. Datasets information for the raw material input of the studied product is listed in the Annex I of the LCA report. The data quality assessment summary of the A1-A3 stage in the LCA study is listed in the Table above, which is based on the PCR. The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

The data quality assessment on secondary data about time-related, geographic-related and technology-related representativeness is summarized here:

- Existing LCI data were, at most, 10 years old. Newly collected LCI data were current or up to 3 years old.
- The LCI data related to the geographical locations in which the processes occurred, e.g. electricity and transportation data from China, disposal in GLO and etc.
- The technology represented the average technologies at the time of data collection.

In general, time representation of the dataset's selection is very good for the studied product, the technical representation is good, the geographical representation is good. No poor or very poor data was found during the assessment of relevant data.

**Allocation**

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation.

In this study, allocation is conducted in the following order.

- Allocation should be avoided.

- Allocation should be based on physical properties (e.g.mass) when the difference in revenue is small.
- Allocation should be based on economic values.

In this study, the factory only manufactured Acoustic panel. For the allocation of waste, this study strictly follows the PCR. Specifically, the waste allocation is based on the polluter pays principle. For environmental burden from the waste generated from the manufacturing process, it is allocated to the studied product. For the environmental burden of the end-of-life stage, it is allocated to the studied product.

During the production process of the Acoustic panel product, there were product scrap produced along with the studied products. Although the factory said that the scraps are sold to the person who collects the scraps, there is no sufficient evidence for how the scraps were treated in the next step (recycling for substitution of raw materials in other production system, landfilling, incineration etc.). So, the treatment of such scraps is included in this study. And a conservative assumption is made here for treating these scraps, i.e., incineration. Further in this report, a sensitivity analysis is conducted to show the different environmental impacts between the landfilling and incineration.

**Key assumptions**

The main assumptions and limitations of this LCA study are as follows：

- The product losses rate is approximately 5% in Module A5.
- Demolition of the products spent 1.1 kwh diesel/tonne.
- Transport (for wastes to be incinerated) is assumed to be 130 km.
- Treatment of products in Module C3 spent 7.8 kwh diesel/tonne and 2.2 kwh electricity/tonne.
- All wastes were incinerated in C4 stage.

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

| | Product stage | | | Construction process stage | | Use stage | | | | | | | End of life stage | | | | Resource recovery stage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Raw material supply | Transport | Manufacturing | Transport | Construction installation | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal | Reuse-Recovery-Recycling-potential |
| **Module** | **A1** | **A2** | **A3** | **A4** | **A5** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| Modules declared | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| Geography | CN | CN | CN | CN to DK | DK | DK | DK | DK | DK | DK | DK | DK | DK | DK | DK | DK | DK |
| Specific data used | 14.08% | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Variation – products | 4% | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Variation – sites | N/A (single site) | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

# Environmental performance

This LCA analysis applied the EN 15804+A2:2012+A2:2019/AC:2021, EF 3.1 was used.
All results are calculated on the declared unit, which is 1 $m^2$ of Acoustic panel in this study.

## LCA results of the product(s) - main environmental performance results
## Mandatory impact category indicators according to EN 15804

| Indicator | Unit | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GWP-fossil | kg $CO_2$ eq. | 8.97E+00 | 8.20E+00 | 1.15E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 2.66E-03 | 3.57E-01 | 2.44E-02 | 3.11E+00 | 0.00E+00 |
| GWP-biogenic | kg $CO_2$ eq. | -7.55E+00 | 1.29E-03 | 7.67E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.58E-07 | 7.53E-05 | 1.33E-05 | 1.53E-04 | 0.00E+00 |
| GWP-luluc | kg $CO_2$ eq. | 1.51E-02 | 3.96E-03 | 9.85E-04 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.17E-07 | 1.18E-04 | 1.64E-05 | 3.29E-05 | 0.00E+00 |
| GWP-total | kg $CO_2$ eq. | 1.43E+00 | 8.20E+00 | 8.83E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 2.66E-03 | 3.57E-01 | 2.44E-02 | 3.11E+00 | 0.00E+00 |
| ODP | kg CFC11 eq. | 3.93E-08 | 2.75E-09 | 2.35E-09 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 7.26E-13 | 1.86E-10 | 2.01E-11 | 1.62E-10 | 0.00E+00 |
| AP | mol $H^+$ eq. | 4.09E-02 | 2.39E-01 | 1.45E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 2.48E-06 | 1.15E-03 | 4.79E-05 | 1.51E-03 | 0.00E+00 |
| EP-freshwater | kg P eq. | 2.33E-03 | 2.77E-04 | 1.40E-04 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 2.78E-08 | 2.44E-05 | 5.25E-06 | 4.42E-05 | 0.00E+00 |
| EP-marine | kg N eq. | 8.89E-03 | 6.03E-02 | 3.70E-03 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 4.10E-07 | 3.86E-04 | 7.74E-06 | 8.77E-04 | 0.00E+00 |
| EP-terrestrial | mol N eq. | 8.83E-02 | 6.69E-01 | 4.01E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 4.31E-06 | 4.20E-03 | 7.34E-05 | 7.83E-03 | 0.00E+00 |
| POCP | kg NMVOC eq. | 3.96E-02 | 1.81E-01 | 1.17E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 5.33E-06 | 1.74E-03 | 5.16E-05 | 1.95E-03 | 0.00E+00 |
| ADP-fossil | MJ | 1.70E+02 | 1.01E+02 | 1.47E+01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 3.46E-02 | 5.07E+00 | 3.68E-01 | 1.29E+00 | 0.00E+00 |
| ADP-minerals&metals | kg Sb eq. | 6.60E-05 | 7.76E-06 | 3.96E-06 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 3.83E-10 | 1.20E-06 | 7.38E-08 | 2.22E-07 | 0.00E+00 |
| WDP | $m^3$ | 1.92E+00 | 2.20E-01 | 1.57E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 2.54E-05 | 1.96E-02 | 1.46E-03 | 3.66E-02 | 0.00E+00 |

| Acrynom | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption |
|---|---|

** Disclaimer:*

- *The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*
- *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.*
- *The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3)*

## Additional mandatory and voluntary impact category indicators

| Indicator | Unit | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GWP-GHG[1] | kg $CO_2$ eq. | 9.10E+00 | 8.20E+00 | 1.16E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 2.66E-03 | 3.57E-01 | 2.44E-02 | 3.11E+00 | 0.00E+00 |

## Resource use indicators

| Indicator | Unit | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PENRT | MJ | 1.70E+02 | 1.01E+02 | 1.47E+01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 3.46E-02 | 5.07E+00 | 3.68E-01 | 1.29E+00 | 0.00E+00 |
| PENRM | MJ | 4.55E+01 | 0.00E+00 | -1.12E+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 | 0.00E+00 | -3.43E+01 | 0.00E+00 |
| PENRE | MJ | 1.24E+02 | 1.01E+02 | 2.59E+01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 3.46E-02 | 5.07E+00 | 3.68E-01 | 3.56E+01 | 0.00E+00 |
| PERT | MJ | 7.29E+01 | 6.85E-01 | 3.70E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.16E-04 | 8.00E-02 | 3.31E-02 | 2.88E-02 | 0.00E+00 |
| PERM | MJ | 3.71E+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 | 0.00E+00 | 0.00E+00 | 0.00E+00 | -3.71E+01 | 0.00E+00 |
| PERE | MJ | 3.58E+01 | 6.85E-01 | 3.70E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.16E-04 | 8.00E-02 | 3.31E-02 | 3.71E+01 | 0.00E+00 |
| SM | 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 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| RSF | 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 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| NRSF | 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 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| FW | $m^3$ | 5.44E-02 | 7.01E-03 | 4.30E-03 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 9.05E-07 | 6.32E-04 | 8.57E-05 | 1.20E-03 | 0.00E+00 |

** Disclaimer: The calculation of these indicators is based on the option A shown in Annex 3 of the PCR.*

[1] This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic $CO_2$ is set to zero.

## Waste indicators

| Indicator | Unit | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HWD | kg | 1.13E-02 | 1.07E-03 | 1.28E-02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 2.84E-07 | 1.28E-04 | 8.00E-06 | 7.85E-02 | 0.00E+00 |
| NHWD | kg | 1.14E+00 | 2.76E-01 | 1.30E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.33E-05 | 2.43E-01 | 5.60E-04 | 7.49E-02 | 0.00E+00 |
| RWD | kg | 1.18E-04 | 9.77E-06 | 6.81E-06 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 2.54E-09 | 1.49E-06 | 8.90E-07 | 3.71E-07 | 0.00E+00 |

## Output flow indicators

| Indicator | Unit | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | 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 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| MFR | 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 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| MER | 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 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| EE, electricity | 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 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| EE, thermal | 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 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

# Additional LCA results (other environmental performance results) of the product(s)

| LCA result of one declared unit product (A-C) | Variation-products |
|---|---|
| GWP-fossil | 16.48% |
| GWP-biogenic | 15.04% |
| GWP-luluc | 7.26% |
| GWP-total | 16.31% |
| ODP | 24.76% |
| AP | 33.80% |
| EP-freshwater | 4.59% |
| EP- marine | 34.27% |
| EP-terrestrial | 34.82% |
| POCP | 32.54% |
| ADP-minerals&metals* | 3.44% |
| ADP-fossil* | 15.62% |
| WDP* | 9.01% |

# Abbreviations

| Abbreviation | Definition |
|---|---|
| General Abbreviations | |
| EN | European Norm (Standard) |
| EPD | Environmental Product Declaration |
| EF | Environmental Footprint |
| GPI | General Programme Instructions |
| ISO | International Organization for Standardization |
| LCA | Life cycle assessment |
| PCR | Product Category Rules |
| CEN | European Committee for Standardization |
| CPC | Central product classification |
| SVHC | Substances of Very High Concern |
| Environmental impact indicators (EN 15804) | |
| GHG | Greenhouse gas |
| GWP | Global Warming Potential (kg $CO_2$ eq.) |
| GWP-fossil | Global Warming Potential from fossil sources (kg $CO_2$ eq.) |
| GWP-biogenic | Global Warming Potential from biogenic sources (kg $CO_2$ eq.) |
| GWP-luluc | Global Warming Potential from land use and land use change (kg $CO_2$ eq.) |
| GWP-total | Total Global Warming Potential (kg $CO_2$ eq.) |
| GWP-GHG | Global Warming Potential for greenhouse gases (kg $CO_2$ eq.) |
| ODP | Ozone Depletion Potential (kg CFC-11 eq.) |
| AP | Acidification Potential (mol $H^+$ eq.) |
| EP | Eutrophication Potential |
| EP-freshwater | Freshwater eutrophication potential (kg P eq.) |
| EP-marine | Marine eutrophication potential (kg N eq.) |
| EP-terrestrial | Terrestrial eutrophication potential (mol N eq.) |
| POCP | Photochemical Ozone Creation Potential (kg NMVOC eq.) |
| ADP-fossil | Abiotic depletion potential for fossil resources (MJ) |
| ADP-minerals&metals | Abiotic depletion potential for non-fossil resources (MJ) |
| WDP | Water Deprivation Potential ($m^3$) |
| Resource Use Indicators | |
| PENRT | Total use of non-renewable primary energy resources (MJ) |
| PENRM | Use of non-renewable primary energy resources used as raw materials (MJ) |
| PENRE | Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ) |
| PERT | Total use of renewable primary energy resources (MJ) |
| PERM | Use of renewable primary energy resources used as raw materials (MJ) |
| PERE | Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ) |
| SM | Use of secondary material (kg) |
| RSF | Use of renewable secondary fuels (MJ) |
| NRSF | Use of non-renewable secondary fuels (MJ) |

| Abbreviation | Definition |
|---|---|
| FW | Use of net fresh water ($m^3$) |
| Waste Indicators | |
| HW | Hazardous Waste (disposed) (kg) |
| NHW | Non-Hazardous Waste (disposed) (kg) |
| RW | Radioactive Waste (disposed) (kg) |
| Output Flow Indicators | |
| CFR | Components for Reuse (kg) |
| MR | Material for Recycling (kg) |
| MER | Materials for Energy Recovery (kg) |
| EE, electricity | Exported Energy, Electricity (MJ) |
| EE, thermal | Exported Energy, Thermal |

# Version history

Original Version of the EPD, 2026-05-21

# References

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[3] ISO 14025:2006, Environmental labels and declarations-Type III environmental declarations-Principles and procedures.
[4] ISO 14040: 2006/Amd 1:2020 Environmental management - Life cycle assessment - Principles and framework Amendment 1 (ISO 2020).
[5] ISO 14044: 2006/Amd 2:2020 Environmental management - Life cycle assessment - Requirements and guidelines Amendment 2 (ISO 2020).
[6] ISO 21930:2017, Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services.
[7] General Progamme Instructions of the International EPD System. Version 5.0.1.
[8] PCR 2019:14. Construction Products, Version 2.0.1, [Valid till: 2030].
[9] Life Cycle Assessment of Acoustic panel.
[10] Fletcher, Carly & Dunk, Rachel. (2023). Recovery and utilisation of municipal solid waste incineration bottom ash: implications for European waste management strategy. Detritus. 43-57. 10.31025/2611-4135/2023.17274.


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