In accordance with
ISO 14025:2019, EN 15804:2012+A2:2019 and
ISO 21930:2017

# ENVIRONMENTAL PRODUCT DECLARATION

## Veneered MDF acoustic panels and Melamine faced MDF acoustic panels

from

Jiangsu Hanghe Soundproof Material Co., Ltd


**Programme: The International EPD® System, www.environdec.com**

**Programme operator: EPD International AB**

**PCR: 2019: 14 Construction products v1.2.4**

**EPD registration number: S-P-07355**

**Publication date: 2023-01-06**

**Valid until: 2028-01-05**


*Note: 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.*

航禾 HANGHE

EPD®

# Programme information

| | |
|---|---|
| **Programme:** | The International EPD® System<br><br>EPD International AB<br>Box 210 60<br>SE-100 31 Stockholm<br>Sweden<br><br>www.environdec.com<br>info@environdec.com |

| | |
|---|---|
| Product category rules (PCR): | PCR 2019: 14 PCR Construction products v1.2.4 |
| PCR review was conducted by: | Martin Erlandsson, IVL Swedish Environmental Research Institute, martin.erlandsson@ivl.se |
| Life cycle assessment (LCA) was conducted by: | Dandan LI, Star Talers Environmental Technology Co., Ltd. dandan.li@startalers.cn |
| Independent third-party verification of the declaration and data, according to ISO 14025:2006:<br><br>☐ EPD process certification ☒ EPD verification | |
| Third party verifier: | Dr. Wolfram Trinius |
| Approved by: | *The International EPD® System* |
| Procedure for follow-up of data during EPD validity involves third party verifier:<br><br>☐ Yes ☒ No | |

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# Company information

**Owner of the EPD:**
Jiangsu Hanghe Soundproof Material Co.,Ltd
Address: No. 6-8, Group 11, Fenglong Village, Shizhuang town, Rugao, Jiangsu, China
Website: https://jshanghe.en.alibaba.com
Tel：+86 18801052885 Email: bingchen68@aliyun.com

**Description of the Company:**
Established in 2020, Jiangsu Hanghe Soundproof Material Co.,Ltd (Hanghe hereafter) is a company with own factory based in Rugao, Jiangsu Province, China. It is located in Fugang Chuanggu Intelligent Manufacturing Industrial Park. Hanghe produces acoustic panels for high-end customers. The target sales market is Europe.

# Product information

**Product name:**
Veneered medium-density fibreboard (MDF) acoustic panels and melamine faced MDF acoustic panels

**UN CPC code:**
314 Boards and Panels

**Geographical scope:** Global

**Product description and application:**
The panels are made of slats of MDF that are mounted on a 9 mm thick black polyester felt made from 80% recycled plastic bottles. The surface of raw MDF is covered either with wood veneer or melamine impregnated paper. The panels can be easily installed to walls and ceilings, ideal for both domestic or commercial use, providing a comfortable sound environment.

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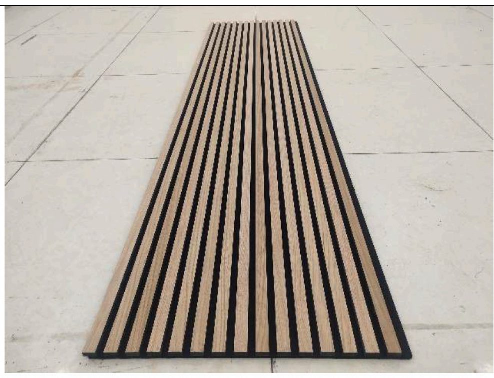
|  |  |
| Front view | Back view |

*Figure 1 Hanghe acoustic panel*

As the results for A1-A3 of the two product series differ less than 5% for the GWP-GHG indicator. Worst-case scenario (veneered MDF acoustic panels) was used to represent the LCA results.

## Product identification:

*Table 1 Product technical specifications*

| Technical Parameter | Value |
|---|---|
| Weight | 7.69 kg/m$^2$ |
| Sizes | 2440x600x22mm, 3000x600x22mm |
| Sound absorption | Noise Reduction Coefficient (NRC): 0.80 |
| Thermal resistance | MDF: 0.125 (m$^2$·K)/W<br>Polyester: 0.261 (m$^2$·K)/W |
| Thermal conductivity | MDF: 0.106 W/(m·K)<br>Polyester: 0.036 W/(m·K) |

## Content declaration

Raw materials of acoustic panels are mainly MDF and polyester. The ratios of raw materials are listed in Table 2.

*Table 2 Raw materials of acoustic panels per declared unit*

| Materials | Veneered MDF Panel | Melamine faced MDF Panel |
|---|---|---|
| **Raw material** | | |
| MDF | 73.5% | 76.1% |
| Polyester | 22.0% | 22.8% |
| Ethylene vinyl acetate adhesive | 3.2% | 0.04% |
| Veneer | 0.6% | < 0.1% |
| Galvanized steel (Nails) | 0.7% | |
| Polyurethane adhesive | | 1.1% |
| Impregnated Paper | | <0.1% |
| **Packaging** | | |
| Corrugated board box | 0.0683kg – 0.88% (versus product) | |
| Adhesive Tape | 0.0060kg – 0.08% (versus product) | |
| Wood pallet | 0.3140kg – 4.1% (versus product) | |

## Manufacturing Process:

The MDF slats and polyester felts are sourced from upstream suppliers, and transported to the production site for surface treatment. After cutting and sanding, the treated MDF boards are ready to be mounted on the polyester felt. The main raw materials and manufacturing processes for the two series of products are nearly the same. The only difference lies in surface treatment of the MDF and the mounting process. For veneered panels, the MDF slats are nailed down to the polyester felt, while for melamine faced panels, the MDF slats are glued to the felt with hot melt adhesive. After final trimming, the panels are then packed for further transportation.

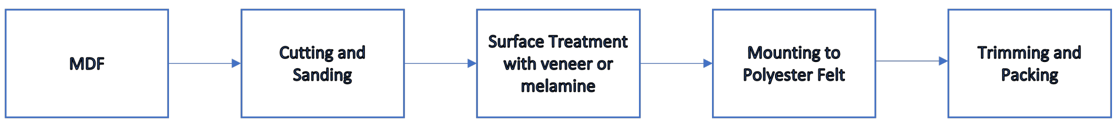



*Figure 2 Manufacturing process*

## Transportation of materials:

According to Hanghe, the raw and auxiliary materials are mainly sourced from mainland China and delivered by lorry. The transportation distance was provided by Hanghe. For packaging materials, Hanghe purchased from several local markets.

**Transportation of product:**

According to Hanghe, products are consumed in EU market, and the transportation distance for product delivery was estimated with reference to external resources. The products are transported with lorry from the production site in Rugao to Shanghai Port, and then with container ship to Fredericia Port in Denmark for further distribution.

The transportation distances used in the LCA model are given in the table below.

*Table 3 Transportation of product*

| Transport | Distance/km | Vehicle |
|---|---|---|
| From production site to Shanghai Port | 200 | 40t Euro4 Lorry |
| Shanghai Port to Fredericia Port | 25 000 | Ship |
| Fredericia Port to distributor and installation site | 1 000 | 40t Euro5 Lorry |

**Product installation:**

For installation, 12 screws are required to install each panel manually. As no accurate data about energy consumption was available, the electricity use was assumed to be 0.012kWh per $m^2$ of panel. Activities related to the recycling and waste disposal of packaging materials were accounted for in this stage.

**End-of-Life:**

Due to lack of accurate data regarding dismantling operations, it was assumed that the electricity consumption for dismantling the screws during C1 De-construction would be the same as installation stage.

For the end-of-life stage, 200km transportation distance from the project site to waste treatment site (C2) was assumed.

For C3 waste processing process, in order to reach the end-of-waste stage, sorting process of the panel and sawing of the MDF is required.

As no specific data was available for end-of-life stage, following the PCR requirements (as stated in PCR section 4.5.4), default values for waste scenarios from Product Environmental Footprint (PEF) Guidance document and supporting documentation “Annex C to the PEF/OEF Methods (Updated May 2020)” was used for the calculation. The waste scenario is presented in the figure below.

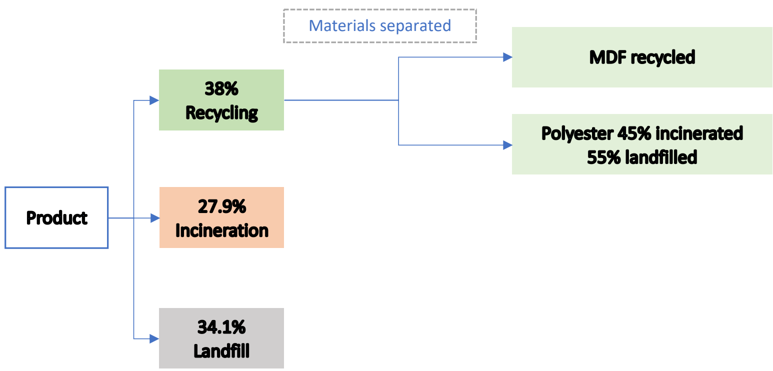



*Figure 3 End-of-Life waste scenario*

**Benefits and loads beyond the system boundary:**

According to the PCR, Module D assesses the impact of the net flows of recovered materials from the life cycle stages A to C. In this study, module D contains credits from the recycling and energy recovery of the packaging from A5 installation, panels from module C3 and C4, and the loss of secondary materials (secondary PET) was declared as a load.

For the recycling process, it is considered that the MDF is collected and recycled for use in substitution of wood fiber. The packaging cardboards are collected and recycled for use in substitution of pulpwood.

For energy recovery, the cardboards, MDF, and polyester are collected and incinerated for use in substitution of wood chips and natural gas, to produce heat and electricity. The selected substitutions for energy recovery represent the technical situation in Denmark.

# LCA information

The study is developed according to ISO 14040/14044, and follows the International EPD® System: *PCR 2019: 14 PCR Construction products v1.2.4* and General Programme Instructions (GPI) v4.0.

**Declared unit:**

In this report, the declared unit is defined as 1 $m^2$ of acoustic panel including the surface treatment (veneer or melamine) of MDF and the polyester felt. The panels are available in different sizes, e.g. 2440x600x22mm, 3000x600x22mm.

**Time representativeness:**

The study used primary data collected from March 2022 to August 2022.

**Database(s) and LCA software used:**

The LCI includes data collection from a variety of publicly available sources, taking into consideration the representativeness in technology, temporal and geographical scales. In case of missing data, proxy data from Ecoinvent 3.7 were referred to, and sensitivity analysis was conducted. For the modeling and calculation, the LCA-software SimaPro version 9.2 was used.

The data quality requirements for this study were as follows:

- Foreground data of the considered system: such as materials or energy flows that enter and leave the production system. These data were collected to the best extend from Hanghe;
- Existing LCI data are, at most, 5 years old. Newly collected LCI data are current or up to 3 years old;
- The LCI data related to the geographical locations where the processes took place;
- The scenarios represented the average technologies at the time of data collection.

**Internal follow-up procedures:**

In order to keep the LCA data representative and reliable, input data for the LCA model as well as information in the EPD, such as raw material acquisition, transportation modes, manufacturing processes, changes in product design etc. will be checked annually by Hanghe internally. If there would be any significant changes taking place, the LCA model, LCA report and EPD report would be updated accordingly and summited for review.

## System diagram:

*Table 4 LCA stages*

| DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; ND = MODULE NOT DECLARED) | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Product Stage | | | Construction process stage | | Use Stage | | | | | | | End of life stage | | | | Resource recovery stage |
| | Raw Material | Transport | Manufacturing | Transport | Assembly / Install | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction and 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 | ND | ND | ND | ND | ND | ND | ND | X | X | X | X | X |
| Geography | CN | | | EU | | - | - | - | - | - | - | - | EU | | | | EU |
| Specific data used | >90% | | | | | - | - | - | - | - | - | - | - | - | - | - | - |
| Variation-products | <10% | | | | | - | - | - | - | - | - | - | - | - | - | - | - |
| Variation-sites | 0% | | | | | - | - | - | - | - | - | - | - | - | - | - | - |

The system boundary considered in this LCA study is "cradle to gate with options, modules C1-C4, module D with optional modules (A1–A3 + C + D + A4 + A5)", except use phase.

- A1-A3: Product stage (raw material acquisition, transport to manufacturing site and manufacturing)
- A4: Transport to installation site
- A5: Installation
- C1-C4: End-of-life stage (deconstruction, transport, waste processing and disposal)
- D: Reuse, recovery and/or recycling potentials

Figure 4 below illustrates the system boundary for this study, including raw material production and transportation, manufacturing, delivery, installation and end-of-life.

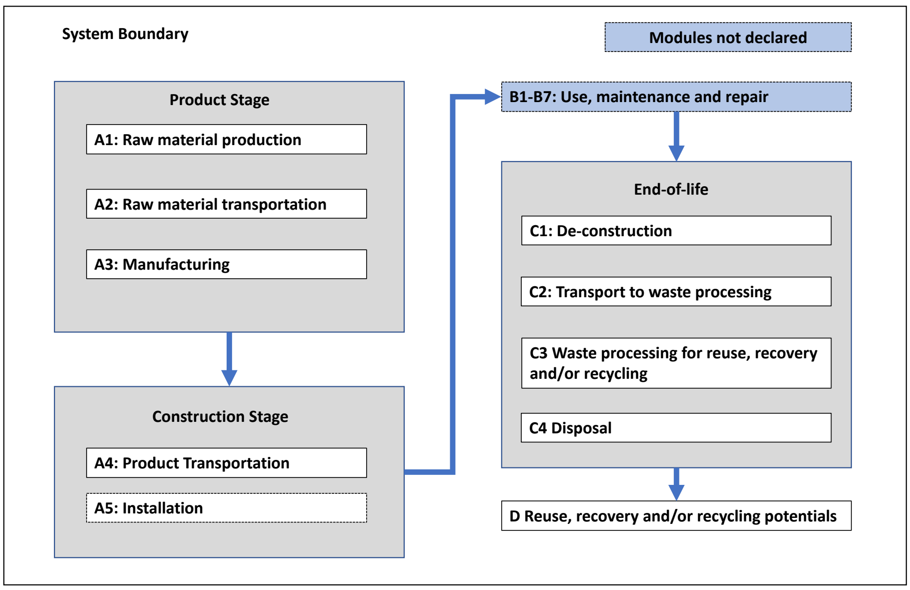



*Figure 4 System boundary of Hanghe acoustic panels*

**Excluded Processes:**

The following steps/stages are not included in the system boundary due to the reason that the elements below are considered irrelevant or not within the boundary to the LCA study of acoustic panels：

- Production and disposal of the infrastructure and capital equipment (buildings, machines, transport media, roads, etc.) during manufacturing.
- The loads and benefits of energy recovery process from the cut-offs of the MDF collected during manufacturing. The cut-offs are sold to external companies for further use.
- Storage phases and sales due to no observable impact.
- Product losses due to abnormal damage such as natural disasters or fire accidents. These losses would mostly be accidental.
- Handling operations at the distribution center and retail outlet due to small contribution and negligible impact.

**Assumptions:**

In order to carry out the LCA study, the following main assumptions were made:

- No known relevant processes or upstream materials within the system boundary were excluded from the model. In case of missing quantitative information, similar suitable data from the background datasets was applied to fill the gap.
- For the production of raw material veneer (80% oak veneer, 20% black walnut veneer), the logs are transported from the USA to the Shanghai Port with ship and further to the veneer production site in Rudong, Jiangsu Province with truck. It was assumed that the overseas freight distance was 10 000 km and the in-land transportation distance was 200 km.
- For A4 product transport stage, the distance from the Fredericia port (Denmark) to installation site was not available. It was assumed to be 1 000km.
- For product installation, 12 screws are required to install each panel manually. As no accurate data about energy consumption was available, the electricity use was assumed to be 0.012kWh per $m^2$ of panel.
- The transport of the dismantled board was considered in the C2 waste transport stage. A distance of 200 km was assumed to the disposal facility.

**Allocation:**

Allocation refers to partitioning of input or output flows of a process or a product system between the product systems under study and one or more other product systems. In this study, there are three types of allocation procedures considered:

*Multi-input processes*

For data input in this study, the allocation of the inputs from coupled processes was generally carried out via the mass. The consumption of raw materials, the transportation of raw materials, and consumption of energy and water during manufacturing was allocated by mass ratio.

*Multi-output processes*

During the production of acoustic panels, the total emission and waste produced were equally allocated to per unit mass. There are no by-products that need to be allocated.

*Allocation for recovery processes*

Primary (first) production of materials is always allocated to the primary user of a material. If material is recycled, the primary producer does not receive any credit for the provision of any recyclable materials. Consequently, recyclable materials are available burden-free for recycling processes, and secondary (recycled) materials bear only the impacts of the recycling processes.

The end-of-life stage of the panels follows the PCR's recommendation on end-of-life scenario for reuse, recycling, and recovery (Chapter 4.5.2 in PCR). After the end-of-waste stage, along with the benefit, the load from processes is also allocated to the next life cycle of substituted products/materials/energy, but not the primary producers, hence no burden or benefit will be allocated to the primary producer of the panels (cut-off approach).

**Cut-off rules:**
The following procedure was followed for the exclusion of inputs and outputs:

- All inputs and outputs to a (unit) process will be included in the calculation for which data is available. Data gaps may be filled by conservative assumptions with average or generic data. Any assumptions for such choices will be documented;
- According to PCR, life cycle inventory data shall according to EN 15804 include a minimum of 95% of total inflows (mass and energy) per module. In addition, if less than 100% of the inflows are accounted for, proxy data or extrapolation should be used to achieve 100% completeness.

**Electricity mix:**
In this LCA study, electricity mix data was used based on grid mixes of China. The electricity inventory is based on data for Chinese electricity generation in 2018 (China Energy Statistics Yearbook 2018). The production of acoustic panels takes place in Rugao, Jiangsu province. Eastern China grid electricity mix was used. The emissions of the electricity used in manufacturing process of this LCA study is 0.875 kg $CO_2$ eq./kWh.

## Environmental performance

Based on the LCA model of acoustic panels, the results were calculated and listed in Table 5. Note that impact results were calculated based on 1 $m^2$ acoustic panels. The results have been demonstrated through different processes according to the PCR. This is an LCA covering two products: veneered MDF acoustic panel and melamine faced MDF acoustic panel. As the results for A1-A3 of the two product series differ less than 5% for the GWP-GHG indicator (15.3 kg $CO_2$ eq. for per $m^2$ veneered product and 14.8 kg $CO_2$ eq. for per $m^2$ melamine faced product). Therefore, worst-case scenario (veneered MDF acoustic panel) was used to represent the LCA results, which is in line with the PCR requirements.

*Table 5 Environmental impacts of acoustic panels*

| Parameter | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| Global warming potential – Fossil (GWP-fossil) | kg $CO_2$ eq. | 1.53E+01 | 2.64E+00 | 2.58E-02 | 4.99E-03 | 1.39E-01 | 2.06E-01 | 1.91E+00 | 3.16E+00 |
| Global warming potential – Biogenic (GWP-biogenic) | kg $CO_2$ eq. | -2.22E+00 | 1.97E-03 | 3.43E-01 | 2.85E-04 | 2.92E-04 | 2.00E-01 | 3.97E+00 | 1.07E+00 |
| Global warming potential - Land use and Land transformation (GWP-luluc) | kg $CO_2$ eq. | 1.96E-02 | 1.49E-03 | 2.96E-05 | 1.03E-05 | 3.88E-05 | 1.09E-04 | 6.59E-05 | 4.49E-03 |
| Global warming potential (GWP) - Total | kg $CO_2$ eq. | 1.31E+01 | 2.64E+00 | 3.69E-01 | 5.28E-03 | 1.40E-01 | 4.06E-01 | 5.87E+00 | 4.23E+00 |
| GWP-GHG [1] | kg $CO_2$ eq. | 1.53E+01 | 2.64E+00 | 2.59E-02 | 5.00E-03 | 1.39E-01 | 2.06E-01 | 1.91E+00 | 3.16E+00 |
| Ozone depletion potential (ODP) | kg CFC 11 eq. | 1.31E-06 | 5.59E-07 | 2.87E-09 | 2.53E-10 | 3.27E-08 | 6.34E-09 | 2.00E-08 | 2.70E-07 |
| Acidification potential (AP) | kg $SO_2$ eq. | 6.98E-02 | 5.30E-02 | 1.66E-04 | 2.29E-05 | 5.05E-04 | 6.03E-04 | 1.58E-03 | 1.37E-02 |
| Eutrophication potential (EP) | kg P eq. | 4.27E-03 | 1.14E-04 | 1.44E-05 | 4.97E-06 | 9.06E-06 | 6.20E-05 | 1.26E-04 | 1.20E-03 |
| Photochemical oxidant formation potential (POFP) | kg NMVOC eq. | 7.34E-02 | 4.55E-02 | 1.72E-04 | 1.14E-05 | 6.24E-04 | 5.02E-04 | 1.83E-03 | 1.83E-02 |
| Particulate matter | kg PM2.5 eq. | 1.26E-02 | 2.57E-03 | 1.91E-05 | 2.10E-06 | 7.09E-05 | 1.14E-04 | 1.17E-04 | 2.70E-03 |
| Abiotic depletion potential – Elements | Kg Sb eq. | 9.40E-05 | 4.35E-06 | 2.10E-07 | 4.53E-08 | 3.26E-07 | 2.90E-06 | 4.00E-07 | 1.19E-05 |
| Abiotic depletion potential – Fossil fuels | MJ, net calorific value | 2.20E+02 | 3.61E+01 | 4.35E-01 | 1.04E-01 | 2.17E+00 | 1.41E+00 | 1.77E+00 | 3.99E+01 |
| Water scarcity footprint | $m^3$ $H_2O$ eq. | 8.30E+00 | 7.45E-02 | 1.20E-02 | 1.08E-03 | 6.91E-03 | 2.67E-02 | 1.75E-01 | 1.12E+00 |

[1] According to the PCR, a supplementary indicator for climate impact (GWP-GHG) shall be reported. This indicator includes all greenhouse gases excluding biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product as defined by IPCC AR 5 (IPCC 2013).

## Use of resources

*Table 6 Resource use of acoustic panels*

| Environmental Impacts | | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|---|
| Primary energy resources – Renewable | Used as energy carrier | MJ, net calorific value | 1.01E+02 | 3.06E-01 | 4.60E-02 | 1.90E-02 | 2.65E-02 | 1.75E-01 | 6.49E-02 | -5.43E+00 |
| | Used as raw materials | MJ, net calorific value | 1.23E+02 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | TOTAL | MJ, net calorific value | 2.25E+02 | 3.06E-01 | 4.60E-02 | 1.90E-02 | 2.65E-02 | 1.75E-01 | 6.49E-02 | -5.43E+00 |
| Primary energy resources – Non-renewable | Used as energy carrier | MJ, net calorific value | 2.47E+02 | 3.48E+01 | 3.30E-01 | 5.32E-02 | 2.08E+00 | 1.24E+00 | 1.78E+00 | 4.53E+01 |
| | Used as raw materials | MJ, net calorific value | 4.25E+01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | TOTAL | MJ, net calorific value | 2.89E+02 | 3.48E+01 | 3.30E-01 | 5.32E-02 | 2.08E+00 | 1.24E+00 | 1.78E+00 | 4.53E+01 |
| Secondary material | | kg | 1.48E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Renewable secondary fuels | | MJ, net calorific value | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Non-renewable secondary fuels | | MJ, net calorific value | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Net use of fresh water | | $m^3$ | 8.48E+00 | 8.18E-02 | 1.18E-02 | 1.06E-03 | 7.20E-03 | 2.70E-02 | 1.79E-01 | 1.16E+00 |

## Waste production and output flows

*Table 7 Waste production of acoustic panels*

| Parameter | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| Hazardous waste disposed | 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 |
| Non-hazardous waste disposed | 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 |
| Radioactive waste disposed | 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 |

*Table 8 Output flows of acoustic panels*

| Parameter | Unit | A1-A3 | A4 | A5 | C1 | C2 | C3 | C4 | D |
|---|---|---|---|---|---|---|---|---|---|
| Components for reuse | 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 |
| Material for recycling | kg | 0.00E+00 | 0.00E+00 | 5.12E-01 | 0.00E+00 | 0.00E+00 | 2.15E+00 | 0.00E+00 | 0.00E+00 |
| Materials for energy recovery | kg | 8.04E-01 | 0.00E+00 | 7.60E-02 | 0.00E+00 | 0.00E+00 | 2.44E+00 | 0.00E+00 | 0.00E+00 |
| Exported electrical energy | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 4.18E+00 | 0.00E+00 |
| Exported thermal energy | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 8.17E+00 | 0.00E+00 |

## Additional environmental information

The manufacturer Jiangsu Hanghe Soundproof Material Co., Ltd complies with the requirements of FSC Standard for Chain of Custody Certification (FSC Code: SAI-COC-006583).

According the test report from SGS, the release of formaldehyde from the acoustic panel is 42mg/kg when tested in accordance with Test C of EN 12149:1997, which is below the threshold of EN 15102:2007+A1:2001. The migration of heavy metals and release of vinyl chloride monomer from the product are in line with the requirements from EN 15102:2007+A1:2001 as well.

The product is compliant with the EU REACH regulation (EC) No. 1907/2006. No substances of very high concern (SVHC) exceed 0.1% (w/w) in the articles of the submitted sample from Hanghe.

# References


China Energy Statistics Yearbook 2018

LCA for Hanghe Acoustic Panels

**INTERNATIONAL EPD SYSTEM**

General Programme Instructions of the International EPD® System. Version 4.0.

PCR 2019:14 Construction Products, Version 1.2.4

**INTERNATIONAL AND EUROPEAN STANDARDS**

EN 15804:2012+A2:2019 Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products

Product Environmental Footprint (PEF) Guidance document and supporting documentation: "Annex C to the PEF/OEF Methods (Updated May 2020)

ISO 21930:2017 Environmental declaration of building products

ISO 14020:2000 Environmental labels and declarations – General principles

ISO 14025:2011 Environmental labels and declarations - Type III environmental declarations -Principles and procedures

ISO 14040:2019 Environmental management - Life cycle assessment - Principles and framework

ISO 14044:2019 Environmental management - Life cycle assessment - Requirements and guidelines

**LCA SOFTWARE AND DATABASE**

SimaPro 9.2, LCA software

Ecoinvent Database 3.7

# Contact Information

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