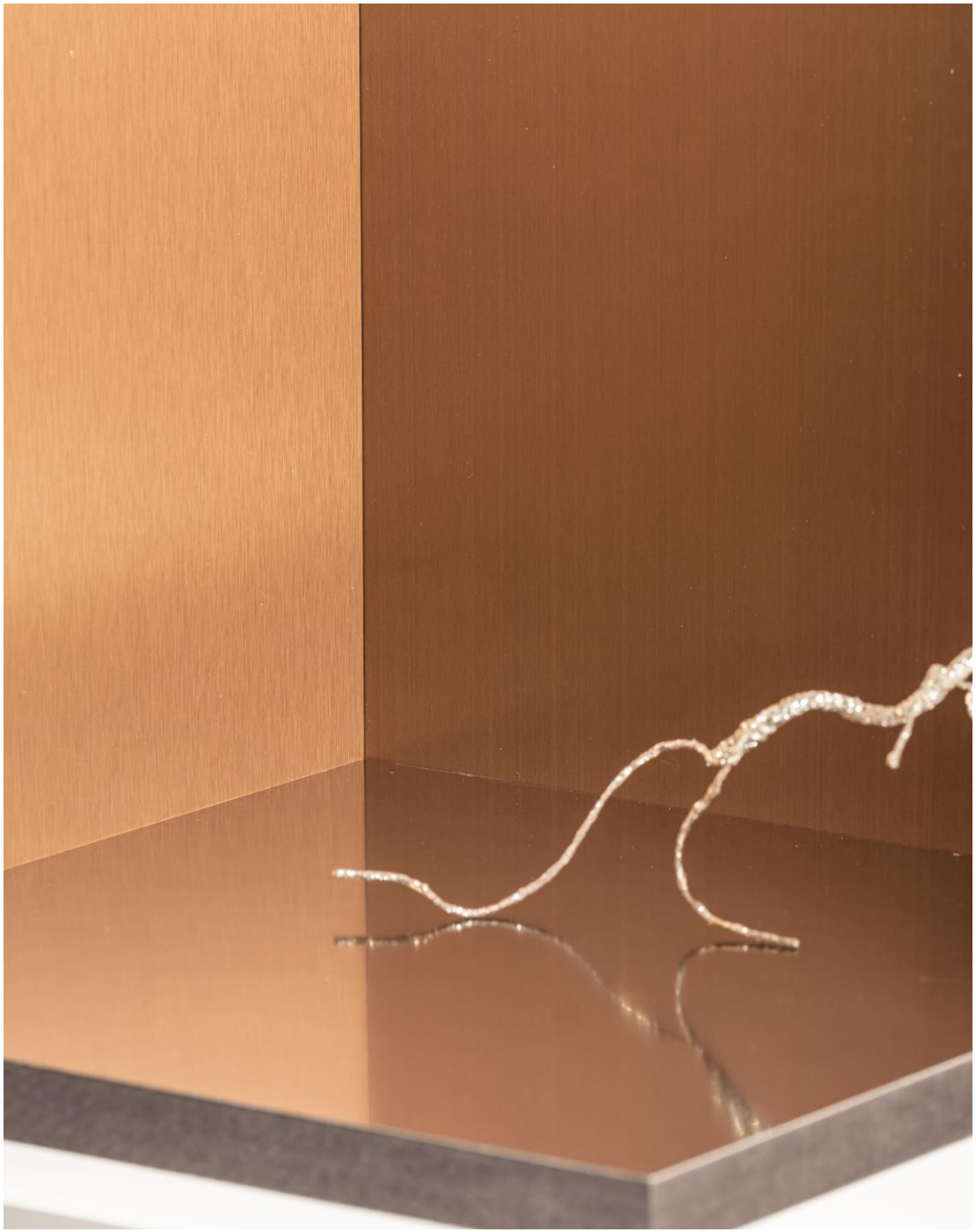


Environmental Product Declaration

In accordance with ISO 14025:2006, EN 15804:2012+A2:2019/AC:2021, and ISO 21930:2017

# Homapal HPL Alu décor 0.8 mm

## *Homapal*

By Nemho, centre of excellence for innovation and technology for Broadview Holding B.V.

| | |
|---|---|
| Programme | The International EPD® System www.environdec.com |
| Programme operator | EPD International AB |
| EPD registration number | EPD-IES-0016754 |
| Publication date | 2024-12-18 |
| Valid until | 2029-12-17 |

*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*

THE INTERNATIONAL EPD® SYSTEM

ECO PLATFORM EPD VERIFIED

# HOMAPAL

Homapal's history goes back to the 1950s. HPL (High Pressure Laminate) was initially produced in the factory in Herzberg/Germany.

In the 1960s, the huge demand for HPLs led to great competitive pressure on the market. In the search for alternative products, surfaces and decors that should have a certain unique selling point, the idea was born to produce HPL panels with surfaces made of genuine metal.

In 2015 Formica acquired 100% of the shares in Homapal and only one year later Homatrade was merged in Homapal GmbH.

In 2019, Homapal was purchased by Broadview Holding, a Netherlands-based global leader in material technology. Part of Broadview's explicit strategy is that each business in its group, including Homapal, will pursue ambitious sustainability initiatives and results. Along with Broadview Holding, Homapal is committed to a long-term planning horizon that includes becoming an industry-leading environmental steward.

The manufacturing nature of Homapal's production process enables to create products that only few companies can offer. Homapal's general approach is to expand its market share with creative and innovative solutions. In 2019, Homapal invested in a new special coating process which gives the laminates scratch-resistant properties. The SRM collection was launched in 2020 and is thus creating the conditions for using metal laminates in horizontal interior applications.

Name and location of production site(s): Herzberg am Harz, Germany.

## *CERTIFICATIONS*

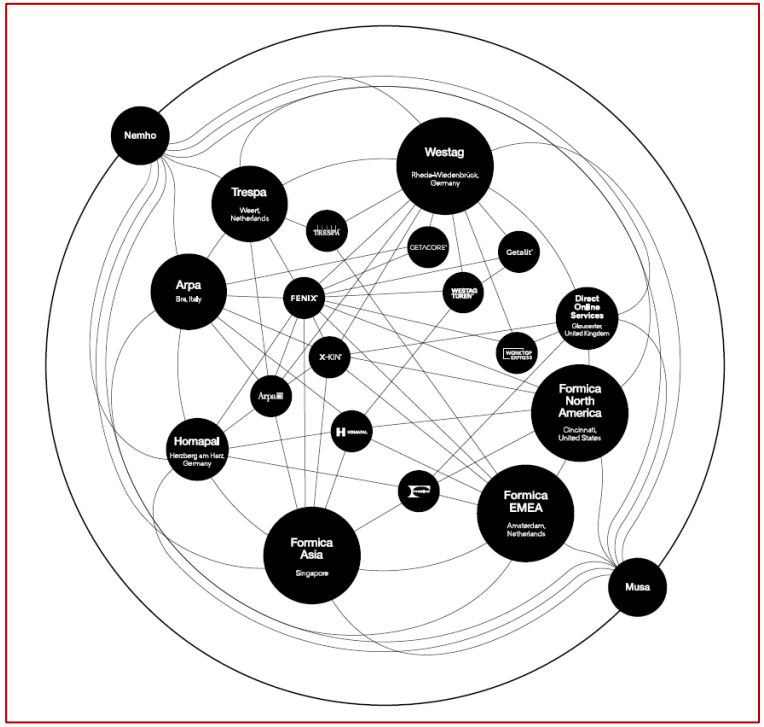
Homapal is certified according to FSC (Forest Stewardship Council), MED (Marine Equipment Certification), and has a SpaEfV energy management system certified by third-party.

# NEMHO

Nemho is located in Weert in the Netherlands and it is the Innovation Centre of the material companies of the Broadview Holding, namely Arpa Industriale, Trespa International, Formica, Homapal, Westag and DOS. Nemho carries out all sustainability-related activities, including LCA studies, for the above-mentioned companies.

Nemho is the owner of this EPD.

Contact Person: Sara Corrado (s.corrado@nemho.com).



# HOMAPAL HPL ALU DÉCOR 0.8 MM

HPLs are decorative high-pressure panels. These products, in all their build-ups, are comprised of individual layers of natural fibres, treated with thermosetting resins and pressed under high pressure. The panels are attributed with an integrated decorative layer and the backside is sanded.

## PRODUCT DESCRIPTION

Homapal HPL Alu décor 0.8 mm is a decorative metal laminate with a surface material consisting of a thin aluminum layer. This aluminum layer is protected by a thin epoxy or anodised coating. The kraft paper core layers are impregnated with phenol-formaldehyde resin.

The Homapal metal laminate consists of approx. 55% paper, 25% phenol-formaldehyde resin and 20% metal foil.

The phenol-formaldehyde resin is irreversibly chemically cross-linked and forms a cured, stable material whose properties are fundamentally different to those of the raw materials. Homapal metal laminate is manufactured under the simultaneous application of heat (> 120°C) and a high specific pressure (> 5 MPa). The backside is sanded.

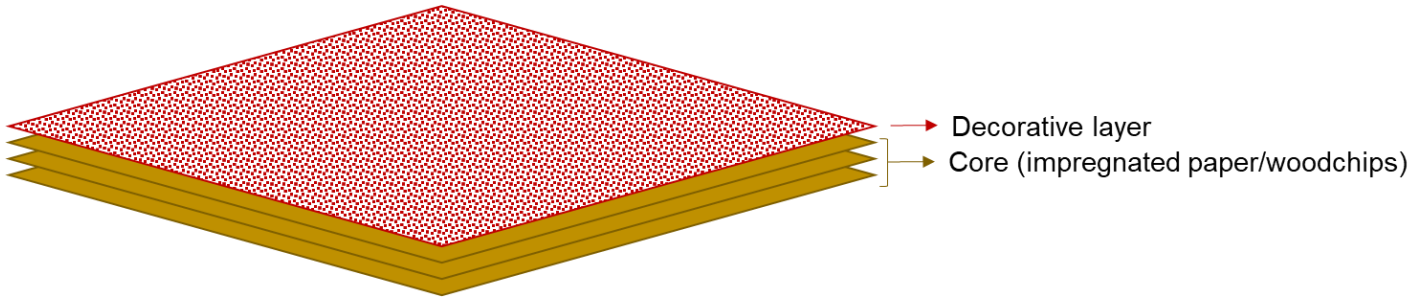
This product is used for interior design applications.

## PRODUCT IDENTIFICATION

High pressure decorative thin and solid panels with genuine metal surfaces, tested in accordance with European standard EN 438 part 2.

## UN CPC CODE

Not applicable.



# METHODOLOGY

This EPD has been developed based on the PCR for construction products 2019:14, Version 1.3.4.

## DECLARED UNIT

The declared unit is 1 square meter of finished panel, 0,8 mm thick, weighing 1,18 kg, plus primary and secondary packaging. All the possible product décor layers, different for the color and for the finishing, are covered by this EPD.

Homapal HPL Alu décor 0,8 mm corresponds to a weighted average of panels produced in the plants of Herzberg am Harz, Germany.

## REFERENCE SERVICE LIFE

Not applicable.

## TIME REPRESENTATIVENESS

Data used for the LCA calculation refer to the production year 2023.

## DATA, DATABASE(S) AND LCA SOFTWARE

Activities under the direct control of the company are modelled using specific data.

The LCA study was performed with the support of the Simapro LCA software (version 10.0).

Generic data are taken from Ecoinvent 3.9.1 and Carbon Minds database.

## ELECTRICITY MODELLING

The electricity has been modelled using the residual mix for medium voltage in Germany included in the Ecoinvent v3.9 database and modelled according to the mix sourced from the Association of issuing bodies (AIB, 2022). The German residual electricity mix consists of 11,38% nuclear energy and 88,64% fossil from coal (57,62%), gas (24,14%), oil (1,51%), other (5,38%).The emission factor of electricity, calculated using the GWP-GHG indicator, is 0,693 $kgCO_{2eq}$/kWh.

## ALLOCATION APPROACH

Environmental impacts of multi-output processes at the plant level are allocated to the outputs based on their mass.

## INFRASTRUCTURES AND CAPITAL GOODS

Infrastructures and capital goods in our production sites are excluded from the analysis. Other infrastructures and capital goods are included in the analysis, as reported in Ecoinvent database, with the exception of chemicals taken from Carbon Minds database.

## ENVIRONMENTAL PERFORMANCE ASSESSMENT

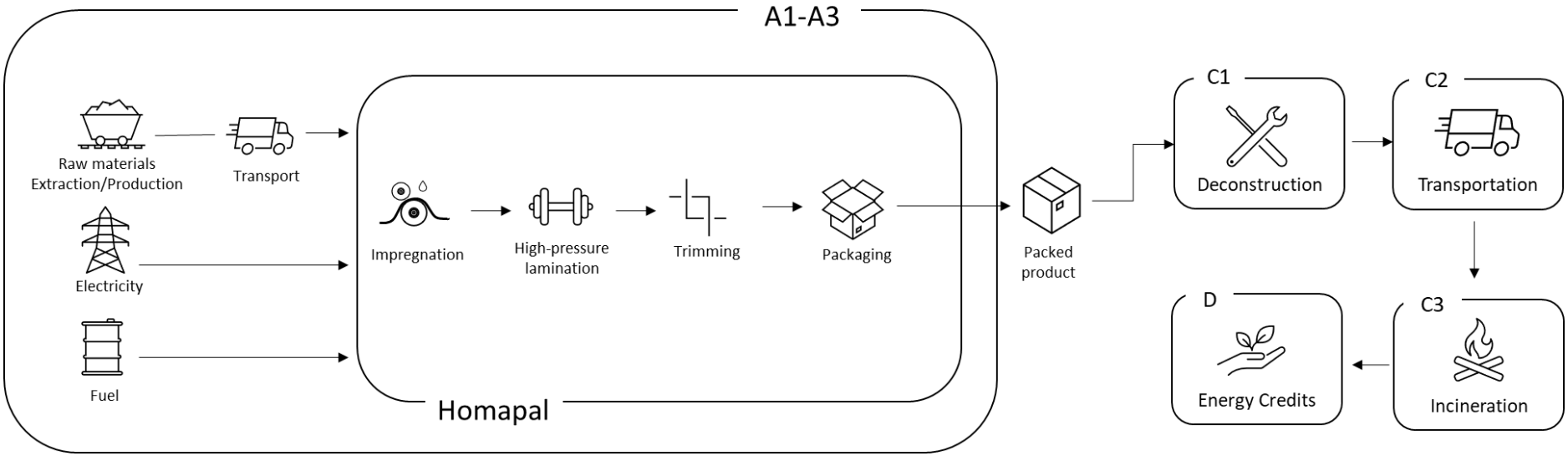
Mandatory potential impact indicators are calculated using the EN 15804 reference package based on EF 3.1.

# SYSTEM BOUNDARIES

The system boundary of this EPD is from cradle to gate with modules C1–C4 and module D (A1–A3 + C + D). The results of modules A1-A3 shouldn't be used without considering the results of module C.

The product stage (modules A1-A3) includes the manufacturing process of Homapal HPL Alu décor 0.8 mm, carried out in the plants of Herzberg am Harz, Germany, the production of raw materials, electricity, and natural gas.

The deconstruction of Homapal HPL Alu décor 0.8 mm (module C1) is modelled according to Gervasio et al. (2018). The transport of HPLs at the end of life (module C2) assumed an average transport distance equal to 100km. HPLs are commonly used as secondary material for energy recovery, therefore it is assumed that 100% of the HPL at the end of life is sent to incineration with thermal efficiency higher than 60% (module C3). Loads from material incineration and resulting energy credits (module D) are declared. Energy credits are calculated considering a lower heating value (LHV) of panels equal to 19 MJ/kg as reported by ICDLI (2015).



## MODULES DECLARED, GEOGRAPHICAL SCOPE, SHARE OF SPECIFIC DATA (IN GWP-GHG INDICATOR) AND DATA VARIATION

| | 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 | ND | ND | ND | ND | ND | ND | ND | ND | ND | X | X | X | X | X |
| Geography | GLO | GLO | DE | - | - | - | - | - | - | - | - | - | GLO | GLO | GLO | GLO | GLO |
| Specific data used | >90% | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Variation – sites | n.a | | | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

*X: module declared, ND: module not declared, n.a: not applicable*

# CONTENT INFORMATION

| Product components | Weight *kg* | Post-consumer material *Weight %* | Biogenic material *Weight-% of product* | Biogenic material *kg C/m²* |
|---|---|---|---|---|
| Paper/woodchips | 0,895 ± 0,018 | 0% | 76,1% ± 1,5% | 0,286 ± 0,006 |
| Phenolic resin | 0,281 ± 0,006 | 0% | 0% ± 0% | 0 ± 0 |
| Aluminum foil | 0,294 ± 0,006 | 0% | 0% ± 0% | 0 ± 0 |
| TOTAL | 1,176 ± 0,024 | 0% | 76,1% ± 1,5% | 0,286 ± 0,006 |

| Packaging materials | Weight *kg* | Weight *% (versus the product)* | Weight biogenic carbon *kg C/m²* |
|---|---|---|---|
| HDF panels | 0,031 | 2.6% | 0,014 |
| Cardboard boxes | 0,004 | 0.4% | 0,002 |
| PE foil | 0,001 | 0.1% | 0,00 |
| **TOTAL** | 0,036 | 3.1% | 0,017 |

The biogenic carbon content of the product and packaging is respectively 1,050 kgCO2eq/m$^2$ and 0,061 kgCO2eq/m$^2$.

Homapal HPL Alu décor 0.8 mm does not contain substances listed on the candidate list of Substances of Very High Concern, as published on the ECHA website, in concentrations exceeding 0,1 percentage by mass at date of issuing this EPD.

# ENVIRONMENTAL PERFORMANCE

## *POTENTIAL ENVIRONMENTAL IMPACT – MANDATORY INDICATORS ACCORDING TO EN 15804*

| Results for 1 m² of Homapal HPL Alu décor 0.8 mm | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **C1** | **C2** | **C3** | **C4** | **D** |
| Climate change – total | kg $CO_2$ eq. | 7,55E+00 | 7,47E-02 | 1,21E-02 | 1,81E+00 | 0,00E+00 | -1,19E+00 |
| Climate change - fossil | kg $CO_2$ eq. | 8,55E+00 | 7,44E-02 | 1,21E-02 | 7,76E-01 | 0,00E+00 | -1,18E+00 |
| Climate change – biogenic | kg $CO_2$ eq. | -1,02E+00 | 1,56E-04 | 3,94E-06 | 1,04E+00 | 0,00E+00 | -1,47E-03 |
| Climate change – land use and land use change | kg $CO_2$ eq. | 1,42E-02 | 1,55E-04 | 5,74E-06 | 2,70E-05 | 0,00E+00 | -1,47E-03 |
| Ozone depletion | kg CFC 11 eq. | 4,07E-07 | 4,83E-10 | 2,67E-10 | 1,91E-09 | 0,00E+00 | -1,42E-08 |
| Acidification | mol $H^+$ eq. | 3,64E-02 | 3,61E-04 | 5,00E-05 | 4,17E-04 | 0,00E+00 | -3,67E-03 |
| Eutrophication aquatic freshwater | kg P eq. | 2,52E-04 | 3,75E-06 | 9,87E-08 | 6,57E-07 | 0,00E+00 | -3,53E-05 |
| Eutrophication aquatic marine | kg N eq. | 7,36E-03 | 6,55E-05 | 1,89E-05 | 1,90E-04 | 0,00E+00 | -7,10E-04 |
| Eutrophication terrestrial | mol N eq. | 8,02E-02 | 7,28E-04 | 2,04E-04 | 1,96E-03 | 0,00E+00 | -7,89E-03 |
| Photochemical ozone formation | kg NMVOC eq. | 2,77E-02 | 2,16E-04 | 7,65E-05 | 5,07E-04 | 0,00E+00 | -2,90E-03 |
| Depletion of abiotic resources - minerals and metals* | kg Sb eq. | 1,71E-05 | 6,77E-08 | 3,29E-08 | 1,27E-07 | 0,00E+00 | -1,12E-06 |
| Depletion of abiotic resources - fossil fuels* | MJ | 1,16E+02 | 9,63E-01 | 1,78E-01 | 4,78E-01 | 0,00E+00 | -1,60E+01 |
| Water use* | $m^3$ eq. | 1,19E+00 | 1,25E-02 | 8,53E-04 | 8,11E-03 | 0,00E+00 | -1,22E-01 |

** 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 results of the impact categories abiotic depletion of minerals and metals 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 exercised when using the results of these indicators for decision-making purposes.*

## POTENTIAL ENVIRONMENTAL IMPACT – ADDITIONAL MANDATORY AND VOLUNTARY INDICATORS

| Results per for 1 $m^2$ of Homapal HPL Alu décor 0.8 mm | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **C1** | **C2** | **C3** | **C4** | **D** |
| GWP-GHG** | kg $CO_2$ eq. | 8,57E+00 | 7,47E-02 | 1,21E-02 | 7,77E-01 | 0,00E+00 | -1,19E+00 |

## POTENTIAL ENVIRONMENTAL IMPACT – ADDITIONAL VOLUNTARY INDICATORS. RESULTS FOR NORTH AMERICA CALCULATED ACCORDING TO ISO 21930

| Results per for 1 $m^2$ of Homapal HPL Alu décor 0.8 mm | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **C1** | **C2** | **C3** | **C4** | **D** |
| Climate change – GWP 100 (ISO 21930) | kg $CO_2$ eq. | 8,57E+00 | 7,47E-02 | 1,21E-02 | 7,77E-01 | 0,00E+00 | -1,19E+00 |
| Ozone depletion - ODP (ISO 21930) | kg CFC-11 eq. | 4,43E-07 | 8,55E-10 | 2,88E-10 | 2,03E-09 | 0,00E+00 | -1,82E-08 |
| Eutrophication potential - EP (ISO 21930) | kg N eq | 3,91E-03 | 3,57E-05 | 4,07E-06 | 8,93E-05 | 0,00E+00 | -3,52E-04 |
| Acidification potential - AP (ISO 21930) | kg $SO_2$ eq | 3,16E-02 | 3,12E-04 | 4,50E-05 | 3,86E-04 | 0,00E+00 | -3,18E-03 |
| Photochemical ozone formation potential – POCP (ISO 21930) | kg $O_3$ eq. | 4,44E-01 | 4,13E-03 | 1,17E-03 | 1,12E-02 | 0,00E+00 | -4,49E-02 |

*The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.*

** 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 results of the impact categories abiotic depletion of minerals and metals 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 exercised when using the results of these indicators for decision-making purposes.*

## USE OF RESOURCES

| Results for 1 m² of Homapal HPL Alu décor 0.8 mm | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **C1** | **C2** | **C3** | **C4** | **D** |
| Use of renewable primary energy excluding renewable primary energy resources used as raw materials (PERE)*** | MJ | 3,44E+01 | 1,17E-01 | 2,61E-03 | 0,00E+00 | 0,00E+00 | -1,09E+00 |
| Use of renewable primary energy resources used as raw materials (PERM)*** | MJ | 9,08E+00 | 0,00E+00 | 0,00E+00 | -5,45E+00 | 0,00E+00 | 0,00E+00 |
| Total use of renewable primary energy resources (PERT)*** | MJ | 4,35E+01 | 1,17E-01 | 2,61E-03 | -5,45E+00 | 0,00E+00 | -1,09E+00 |
| Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE)*** | MJ | 1,07E+02 | 9,63E-01 | 1,78E-01 | 5,20E+00 | 0,00E+00 | -1,60E+01 |
| Use of non-renewable primary energy resources used as raw materials (PENRM)*** | MJ | 8,67E+00 | 0,00E+00 | 0,00E+00 | -5,20E+00 | 0,00E+00 | 0,00E+00 |
| Total use of non-renewable primary energy re-sources (PENRT)*** | MJ | 1,16E+02 | 9,63E-01 | 1,78E-01 | 0,00E+00 | 0,00E+00 | -1,60E+01 |
| Use of secondary material (SM) | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Use of renewable secondary fuels (RSF) | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Use of non-renewable secondary fuels (NRSF) | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Use of net fresh water (FW) | $m^3$ | 6,90E-02 | 5,15E-04 | 2,80E-05 | 3,57E-04 | 0,00E+00 | -4,92E-03 |

*** *Primary energy use indicators are calculated following option B described in Annex 3 of PCR for Construction products v 1.3.1.*

## WASTE PRODUCTION

| Results for 1 m² of Homapal HPL Alu décor 0.8 mm | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **C1** | **C2** | **C3** | **C4** | **D** |
| Hazardous waste disposed | kg | 1,90E-02 | 3,03E-05 | 4,97E-06 | 4,48E-01 | 0,00E+00 | -3,23E-04 |
| Non-hazardous waste disposed | kg | 1,18E+00 | 4,41E-03 | 1,57E-02 | 1,36E-01 | 0,00E+00 | -5,06E-02 |
| Radioactive waste disposed | kg | 1,82E-04 | 2,60E-06 | 5,44E-08 | 4,53E-07 | 0,00E+00 | -2,38E-05 |

## OUTPUT FLOWS

| Results for 1 m² of Homapal HPL Alu décor 0.8 mm | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **Tot.A1-A3** | **C1** | **C2** | **C3** | **C4** | **D** |
| Components for re-use | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Material for recycling | kg | 1,61E-01 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Materials for energy recovery | kg | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| Exported energy, electricity | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 3,34E+00 | 0,00E+00 | 0,00E+00 |
| Exported energy, thermal | MJ | 0,00E+00 | 0,00E+00 | 0,00E+00 | 6,74E+00 | 0,00E+00 | 0,00E+00 |

# ADDITIONAL INFORMATION

Reducing the carbon footprint is key for our overall sustainability policy and it is based on our core belief that it is the right thing to do. We are also convinced that reducing our overall environmental footprint is essential to the long-term success of our business and the environment around us. That is why sustainability is embedded in our business philosophy with the credo ‘do no harm, do good, do better.’

At the core of our sustainability strategy is the principle that we should start with ourselves when we seek to improve the world: ‘do no harm.’ Our approach is straightforward: we measure our impact, select targets to reduce this impact and monitor and report on progress. To measure our impact, we use the Life Cycle Assessment (LCA) methodology.

The second element of our strategy is to look for opportunities that support the environment beyond the direct scope of our own manufacturing footprint: ‘do good.’ This includes creating highly durable products that have a long lifespan that limit the need for replacement. Additionally, we will develop projects that absorb or reduce carbon emissions that are not directly linked to our factories or product portfolio.

We believe that addressing sustainability challenges will allow our company to continue to grow and ‘do better’ in the future. Investing in sustainability should – in the end – ensure that these efforts go beyond established regulatory requirements and the net effect of our efforts will positively impact the environment in which we operate.

Further details on our philosophy, approach and goals can be found in our position paper available online.
https://www.homapal.com/fileadmin/redakteure/Nachhaltigkeit/EN-Sustainability-Homapal-2023.pdf

# PROGRAM 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:** | info@environdec.com |

| |
|---|
| **Product Category Rules (PCR)** |
| CEN standard EN 15804 serves as the Core Product Category Rules (PCR) |
| Product category rules (PCR): PCR 2019:14 CONSTRUCTION PRODUCTS VERSION 1.3.4 |
| PCR review was conducted by: the Technical Committee of the International EPD® System. Chair of the review is Claudia A. Peña. The review panel may be contacted via info@environdec.com |
| **Life Cycle Assessment (LCA)** |
| LCA accountability: Michal Dobrowolski, Nemho; Eneko Ayerza Insausti, Nemho |
| **Third-party verification** |
| Independent third-party verification of the declaration and data, according to ISO 14025:2006 via:<br><br>☒ EPD verification by EPD Process Certification*<br><br>Internal auditor: Lara Naested, Nemho<br><br>Third-party verification: SGS Italia S.p.A. Via Caldera 21, 20153 Milano.(www.it.sgs.com) is an approved certification body accountable for third-party verification<br><br>Third-party verifier is accredited by: *Accredia, certificate n.0005VV*<br><br>*For EPD Process Certification, an accredited certification body certifies and reviews the management process and verifies EPDs published on a regular basis. For details about third-party verification procedure of the EPDs, see GPI v.4, Section 7.5. |
| 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.

# REFERENCES


- General Programme instructions of the International EPD® System. Version 4.0.
- Gervasio, Dimova, Pinto (2018). Benchmarking the Life-Cycle Environmental Performance of Buildings. Sustainability.
- ICDLI (2015). Technical characteristics and physical properties of HPL (Technical leaflet).
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- PCR 2019:14 Construction products, Version 1.3.4