



ENVIRONMENTAL PRODUCT DECLARATION

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



ECOPHON FADE™ ONE SMOOTH

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

Programme operator: EPD International AB

Version: 1.0

Registration number: EPD-IES-0015474

Date of publication (issue): 2024-08-27

Date of validity: 2029-08-26

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



The environmental impacts of this product have been assessed over its whole life cycle. Its Environmental Product Declaration has been verified by an independent third party.



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GENERAL INFORMATION

Manufacturer: Saint-Gobain Ecophon AB, Box 500, 265 03 Hyllinge, Sweden

Production plant: Sala, Västmanland, Sweden

Framework: The LCA is based on 2023 production data for one site.

Geographical scope: Global

Program used: The International EPD® System.

PCR identification: PCR 2019:14 Construction products (EN 15804+A2), version 1.3.3

UN CPC CODE: 37410 (37990, 37129)

Owner of the declaration: Saint-Gobain Ecophon AB

Product name and manufacturer represented: Ecophon Fade ONE

This EPD covers information modules A1 to C4 (cradle to grave) + module D as defined in EN 15804:2012 + A2:2019

EPD® prepared by: Markus Beckman, Saint-Gobain Ecophon AB

Geographical scope of the EPD®: Global

The intended use of this EPD is for B2B communication.

EPD® registration number: EPD-IES-0015474

Declaration issued: 2024-08-27, **valid until:** 2029-08-26

Demonstration of verification: an independent verification of the declaration was made, according to EN ISO 14025:2010. This verification was external and conducted by a third party, based on the PCR mentioned above (see information below).

| | |
|-----------|--|
| Programme | The international EPD® System |
| Adress: | EPD® International AB Box 210 60 SE-100 31 Stockholm Sweden |
| Website: | www.environdec.com |
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| |
|---|
| CEN standard EN 15804:2012 + A2:2019 serves as the Core Product Category Rules (PCR) |
| Product category rules (PCR): PCR 2019:14 Construction Products, version 1.11 |
| PCR review was conducted by: El Comité Técnico del Sistema Internacional EPD®. See www.environdec.com for a list of members Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact |
| Independent third-party verification of the declaration and data, according to ISO 14025:2006: <input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification |
| Third party verifier : Marcus Wendin Miljögiraff AB Tlf +46733248185 marcus@miljogiraff.se In case of recognized individual verifiers: Approved by: The International EPD® System |
| Procedure for follow-up of data during EPD validity involves third part verifier: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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.

PRODUCT DESCRIPTION

Saint-Gobain Ecophon develops, manufactures and markets acoustic products and systems that contribute to a good working environment by enhancing peoples' wellbeing and performance.

This Environmental Product Declaration (EPD) describes the environmental impact of 1 kg of acoustic plaster, to be applied on a sound absorbing substrate such as glass wool. The EPD covers an acoustic plaster produced on behalf of Ecophon at the Saint-Gobain Scanspac production site in Sala, Sweden.

Ecophon Fade brings together aesthetics and acoustic performance which makes it ideal for a wide range of applications ranging from historic buildings to highend residential, commercial, retail and educational spaces. The plaster can be applied on any surface including straight and curved walls, dramatic angles and arching domes. The acoustic plaster is anti-static and inorganic resulting in no requirement for maintenance and it's very easy to repair. The acoustic plaster can last as long as the building itself

To reach sound absorption class A in accordance with ISO 354, acoustic plaster need to be applied on a 40 mm glass wool absorber "Acoustic boards for Fade". The absorber's environmental impact need to be added to obtain the full system's impact. This declaration only includes the impact of the plaster.

Description of the main product components and materials for 1 kg of product:
(to install **1 m²** of ceiling **1.5 kg acoustic plaster** is required)

| Material | Weight-% |
|-------------------|----------|
| Water | 70% |
| Perlite, expanded | 16% |
| Glass fibre | 2-5% |
| Titanium dioxide | 2-5% |
| Clay | 2-5% |
| Biocide | <1% |

All raw materials contributing more than 5% to any environmental impact are listed in the table above. At the date of issue of this environmental declaration, there is no substance of very high concern (SVHC) in concentration above 0.01% by weight.

| Packaging | Weight [grams per kg product] |
|-----------------------|-------------------------------|
| Pallet | 50 g |
| Plastic bucket (PP) | 68 g |
| Plastic wrapping (PE) | 2 g |

The stored biogenic carbon in the packaging material is as GWP indicator balanced out A5 and zero over the life cycle. The same approach is used for energy stored in the packaging materials.

| | Biogenic carbon [kgC/m ²] |
|-----------|---------------------------------------|
| Packaging | 0.029 |
| Product | 0 |

1 kg biogenic carbon is equivalent to 44/12 kg of CO₂.

If there in future occur production changes that generate an increased impact larger than 10% the EPD will be updated and re-verified.

OTHER ENVIRONMENTAL INDICATORS

Regarding the indoor environment, the Ecophon Fade product are certified for or fulfil regulations according to the table below. Certificates for all Ecophon products are available in the [Download centre](#).

Certificate and Regulations

French VOC A+

Finnish M1



LCA CALCULATION INFORMATION

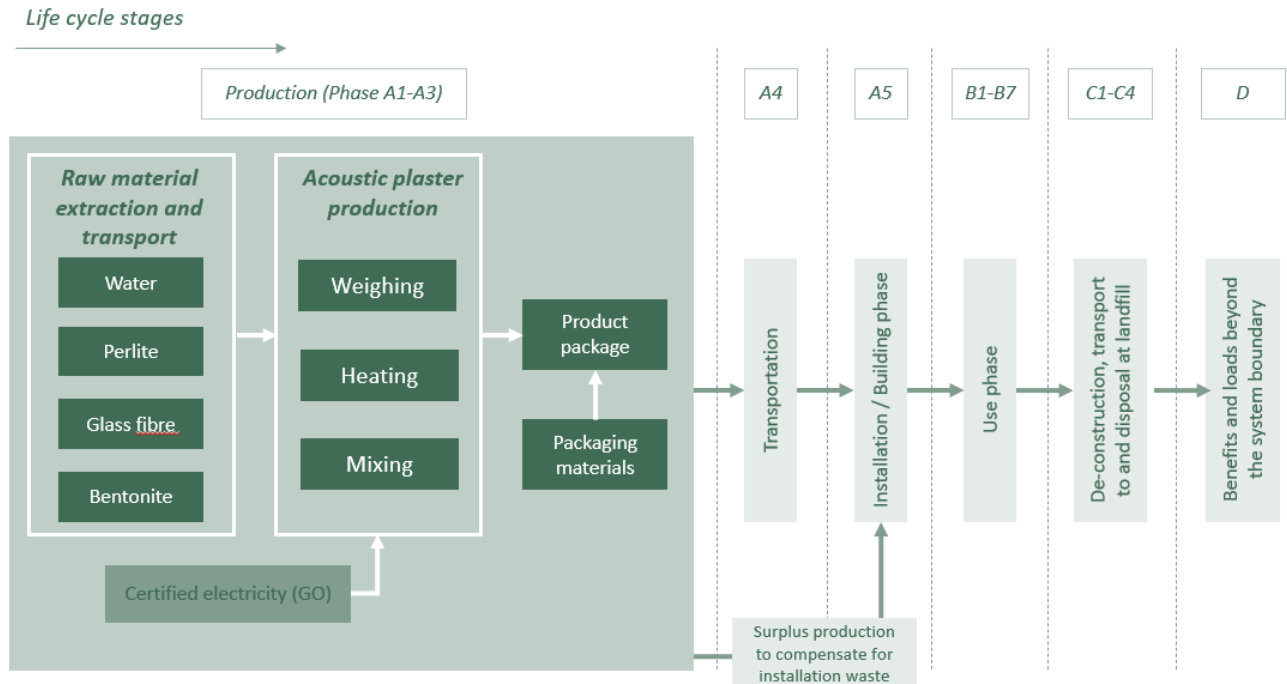
| | |
|---------------------------------------|---|
| Declared unit | 1 kg acoustic plaster (1.5 kg plaster required for 1 m ² ceiling) |
| System boundaries | Cradle to grave: A1-A3, A4-A5, B, C1-C4 and D This EPD covers the environmental impact of acoustic plaster without grid or accessories. |
| Life | 50 years |
| Cut-off rules | <p>The use of cut-off criterion on mass inputs and primary energy at the unit process level (1%) and at the information module level (5%).</p> <p>Impacts related to infrastructure and personnel are included in generic data modules, but not in primary data.</p> <p>Packaging materials from waste handling in A5 is not accounted for as potential benefit in module D. 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> |
| Allocations | Allocation criteria are based on mass (A3) |
| Geographical coverage and time period | <p>Global</p> <p>The year(s) representative for the inventory for the manufacturing (module A3): 2023</p> |

According to EN 15804, EPD of construction products might not be comparable if they do not comply with this standard. According to ISO 21930, EPD's might not be comparable if they are from different EPD administrating schemes. Modules declared, geographical scope, share of specific data, and variation between sites (last two percentages given in GWP indicator) are stated in the following table.

| | Product phase | | | Construction process phase | | Use phase | | | | | | | End of life phase | | | | Resource recovery phase |
|------------------|-------------------------|-------------------------------|---------------|--------------------------------|------------------------------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|-------------------------------|------------------|----------|------------------------------------|
| | Raw material and supply | Transport to the manufacturer | Manufacturing | Transport to the building site | Installation in the building | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport to waste processing | 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 | GLO | EUd one | SE | GLO | GLO | | | | | | | | GLO | GLO | GLO | GLO | GLO |
| Specific data | 0% | | | - | | | | | | | | | | | | | - |
| Variation sites | 0% | | | - | | | | | | | | | | | | | - |

LIFE CYCLE STAGES

Flow diagram of the Life Cycle



Product stage, A1-A3

Description of the stage:

The product stage of the glass wool products is divided into 3 modules: A1 “Raw material and supply”, A2 “Transport to the manufacturer” and A3 “Manufacturer”. The aggregation of the modules A1, A2 and A3 is a possibility considered by the EN 15 804 standard. This rule is applied in this EPD.

A1 Raw material supply

This module takes into account the extraction and processing of all raw materials and energy which occur upstream to the studied manufacturing process, such as perlite, clay and electricity.

A2 Transport to the manufacturer

The raw materials are transported to the manufacturing site. In our case, the modelling includes: road, boat or train transportations (average values) of each raw material.

A3 Manufacturing

Acoustic plaster is manufactured by adding raw materials in a blender according to the given recipe. After mixing and heating, the raw materials are sealed in PP buckets and wrapped with PE film. The production site consumes electricity – electricity from hydropower with Guarantee of Origin (GO).

| Location | Electricity emission factor [gCO ₂ eq./kWh] |
|----------------|--|
| Sala (SE) (GO) | 4 |

Manufacturing covers all processes linked to production, which comprises various related operations besides on-site activities such as weighting, heating, mixing, packaging and internal transportation. Packaging-related flows in the production process and all up-stream packaging are included in the manufacturing module, i.e. wooden pallets, PP buckets and PE-film.

Construction process stage, A4-A5

The construction process is divided into 2 modules: A4 "Transport to the building site" and A5 "Installation in the building".

Description of scenarios and additional technical information:

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 |
|--|---|
| Fuel type, consumption of fuel and vehicle or vehicle type used for transport | Average truck trailer with a 24t payload, diesel consumption 31.7 litres for 100 km |
| Distance | 475 km (based on Ecophon average transports in 2019) |
| Capacity utilisation (including empty returns) | 90% of the capacity in volume 100% of empty returns |
| Bulk density of transported products (if available) | 50 - 120 kg/m ³ |
| Volume capacity utilisation factor (if available) | 0.45 |

The transport distance has been calculated from a Global average transport for Ecophon in 2019.

A5:1 Installation in the building

This module includes waste of products during the implementation, i.e. the additional production processes to compensate the loss and the waste processing which occur in this stage.

Scenarios used for quantity of product wastage and waste processing are:

| Parameter | Value |
|--|---|
| Waste of materials on the building site before waste processing, generated by the product's installation | 5% |
| Output materials (specified by type) as results of waste processing at the building site e.g. of collection for recycling, for energy recovering, disposal | Packaging waste is 100 % landfilled. Ceiling panel losses are landfilled |

A5:2 Energy usage

Acoustic plaster is installed (wet-applied) in a manual process, not requiring any

energy. Since no cut-offs are generated in the installation process, very little installation waste is expected.

Use stage (excluding potential savings), B1-B7

Description of the stage:

The use stage is divided into 7 modules, B1 "Use", B2 "Maintenance", B3 "Repair", B4 "Replacement", B5 "Refurbishment", B6 "Operational energy use", B7 "Operational water use"

Description of scenarios and additional technical information:

Once installation is complete, no actions or technical operations are required during the use stages until the end of life stage. Therefore, acoustic plaster has no impact (excluding potential energy savings) on this stage.

End-of-life stage C1-C4

Description of the stage:

The end-of life stage is divided into 4 modules; C1 "De-construction, demolition", C2 "Transport to waste processing", C3 "Waste processing for reuse, recovery and/or recycling", C4 "Disposal".

Description of scenarios and additional technical information:

C1, De-construction, demolition

The dismantling of acoustic plaster takes part during renovation or demolition of the building. In this case, the environmental impact is assumed to be very small and can be neglected.

C2, Transport to waste processing

The model for transportation (see A4, Transportation to the building site) is applied.

C3, Waste processing for reuse, recovery and/or recycling;

The product is considered to be landfilled without reuse, recovery or recycling.

C4, Disposal;

The product is assumed to be 100% landfilled.

| Parameter | Value/description |
|--|---|
| Collection process specified by type | 1 kg of acoustic plaster (collected with mixed construction waste) |
| Recovery system specified by type | No reuse, recycling or energy recovery |
| Disposal specified by type | Landfill, 1 kg |
| Assumptions for scenario development (e.g. transportation) | Average truck trailer with a 24t payload, diesel consumption 31.7 litres for 100 km 50 km (distance to landfill) |

Reuse/recovery/recycling potential, D

No benefits beyond system boundary, this module is declared as zero.

LCA RESULTS

LCA model, aggregation of data and environmental impact are calculated through the Sphera LCA for Experts (GaBi) software version 10.7. Secondary data is taken from Ecoinvent 3.7 and Sphera. The LCA results are detailed in the tables below.














It is discouraged to use of the results of modules A1-A3 without considering the results of module C.

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.

All results in the EPD are written in logarithmic base of ten. Reading example:
 $5.2\text{E-}03 = 5.2 \cdot 10^{-3} = 0.0052$

ENVIRONMENTAL IMPACT

The EPD use the EN 15804 reference package version 'EN 15804 EF 3.1'.









| Environmental impacts | | | | | | | | | |
|--|---------------|----------------------------|----------|-----------|-------------------|----------|----------|----------|----------------------------|
| Parameters | Product stage | Construction process stage | | Use stage | End-of-life stage | | | | Reuse, recovery, recycling |
| | A1–A3 | A4 | A5 | B1–B7 | C1 | C2 | C3 | C4 | D |
|  Climate change - total [kg CO2 eq.] | 5.80E-01 | 5.14E-02 | 1.10E-01 | 0.00E+00 | 0.00E+00 | 5.06E-03 | 0.00E+00 | 1.65E-02 | 0.00E+00 |
|  Climate change - fossil [kg CO2 eq.] | 6.48E-01 | 4.90E-02 | 3.79E-03 | 0.00E+00 | 0.00E+00 | 4.82E-03 | 0.00E+00 | 1.49E-02 | 0.00E+00 |
|  Climate change - biogenic [kg CO2 eq.] | -7.01E-02 | 2.42E-03 | 1.07E-01 | 0.00E+00 | 0.00E+00 | 2.38E-04 | 0.00E+00 | 1.53E-03 | 0.00E+00 |
|  Climate change - land use and land use change [kg CO2 eq.] | 1.88E-03 | 8.89E-07 | 2.28E-06 | 0.00E+00 | 0.00E+00 | 8.75E-08 | 0.00E+00 | 4.44E-05 | 0.00E+00 |
|  Ozone depletion [kg CFC 11 eq.] | 4.83E-08 | 6.61E-15 | 4.15E-16 | 0.00E+00 | 0.00E+00 | 6.50E-16 | 0.00E+00 | 7.83E-17 | 0.00E+00 |
|  Acidification [Mole of H+ eq.] | 3.50E-03 | 9.17E-05 | 1.11E-05 | 0.00E+00 | 0.00E+00 | 9.02E-06 | 0.00E+00 | 1.08E-04 | 0.00E+00 |
|  Eutrophication, freshwater [kg P eq.] | 2.37E-04 | 9.86E-09 | 1.88E-09 | 0.00E+00 | 0.00E+00 | 9.70E-10 | 0.00E+00 | 2.54E-08 | 0.00E+00 |
|  Eutrophication, marine [kg N eq.] | 7.19E-04 | 4.02E-05 | 3.90E-06 | 0.00E+00 | 0.00E+00 | 3.96E-06 | 0.00E+00 | 2.80E-05 | 0.00E+00 |
|  Eutrophication, terrestrial [Mole of N eq.] | 7.08E-03 | 4.44E-04 | 4.29E-05 | 0.00E+00 | 0.00E+00 | 4.37E-05 | 0.00E+00 | 3.07E-04 | 0.00E+00 |
|  Photochemical ozone formation, human health [kg NMVOC eq.] | 2.51E-03 | 8.50E-05 | 9.52E-06 | 0.00E+00 | 0.00E+00 | 8.36E-06 | 0.00E+00 | 8.47E-05 | 0.00E+00 |
|  Resource use, mineral and metals ^{1 2} [kg Sb eq.] | 3.97E-06 | 6.72E-10 | 1.13E-10 | 0.00E+00 | 0.00E+00 | 6.61E-11 | 0.00E+00 | 1.43E-09 | 0.00E+00 |
|  Resource use, fossils ¹ [MJ] | 1.33E+01 | 6.69E-01 | 5.16E-02 | 0.00E+00 | 0.00E+00 | 6.58E-02 | 0.00E+00 | 2.01E-01 | 0.00E+00 |
|  Water deprivation ¹ [m3 world eq.] | 4.64E-01 | 5.06E-05 | 8.43E-05 | 0.00E+00 | 0.00E+00 | 4.98E-06 | 0.00E+00 | 1.62E-03 | 0.00E+00 |

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

² The results of the impact category 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.




Climate change – total (GWP-tot) over the full life-cycle A1 to C4 sums up to **0.76 kgCO2eq. per kg.**

RESOURCE USE





| Resource use | | | | | | | | | |
|--|---------------|----------------------------|-----------|-----------|-------------------|----------|----------|----------|----------------------------|
| Parameters | Product stage | Construction process stage | | Use stage | End-of-life stage | | | | Reuse, recovery, recycling |
| | A1–A3 | A4 | A5 | B1–B7 | C1 | C2 | C3 | C4 | D |
|  Use of renewable primary energy excluding renewable primary energy resources used as raw materials [MJ] | 2.70E+00 | 3.72E-02 | 3.66E-03 | 0.00E+00 | 0.00E+00 | 3.66E-03 | 0.00E+00 | 2.70E-02 | 0.00E+00 |
|  Use of renewable primary energy used as raw materials [MJ] | 8.50E-01 | 0.00E+00 | -8.50E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials) [MJ] | 3.55E+00 | 3.72E-02 | -8.46E-01 | 0.00E+00 | 0.00E+00 | 3.66E-03 | 0.00E+00 | 2.70E-02 | 0.00E+00 |
|  Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw material [MJ] | 1.33E+01 | 6.71E-01 | 2.99E+00 | 0.00E+00 | 0.00E+00 | 6.60E-02 | 0.00E+00 | 2.01E-01 | 0.00E+00 |
|  Use of non-renewable primary energy used as raw materials [MJ] | 2.80E+00 | 0.00E+00 | -2.80E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) [MJ] | 1.61E+01 | 6.71E-01 | 1.90E-01 | 0.00E+00 | 0.00E+00 | 6.60E-02 | 0.00E+00 | 2.01E-01 | 0.00E+00 |
|  Use of secondary material [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 |
|  Use of renewable secondary fuels [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 |
|  Use of non-renewable secondary fuels [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 |
|  Use of net fresh water [m³] | 1.08E-02 | 2.88E-06 | 2.65E-06 | 0.00E+00 | 0.00E+00 | 2.83E-07 | 0.00E+00 | 4.95E-05 | 0.00E+00 |

The energy stored in packaging material leave system boundary in A5 and energy stored in the product at end-of-life in C4 and is therefore reported with a negative figure in A5 respectively C4, and zero over the life-cycle. This approach is in accordance with Option A as presented in PCR 2019:14.


WASTE CATEGORIES

| Waste categories | | | | | | | | | |
|---|---------------|----------------------------|----------|-----------|-------------------|----------|----------|----------|----------------------------|
| Parameters | Product stage | Construction process stage | | Use stage | End-of-life stage | | | | Reuse, recovery, recycling |
| | A1–A3 | A4 | A5 | B1–B7 | C1 | C2 | C3 | C4 | D |
|  Hazardous waste disposed [kg] | 4.74E-11 | 0.00E+00 | 1.07E-12 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 2.13E-11 | 0.00E+00 |
|  Non-hazardous waste disposed [kg] | 1.98E-02 | 0.00E+00 | 1.20E-01 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 1.00E+00 | 0.00E+00 |
|  Radioactive waste disposed [kg] | 9.64E-06 | 0.00E+00 | 1.53E-07 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 2.10E-06 | 0.00E+00 |

OUTPUT FLOW

| Output flows | | | | | | | | | |
|--|---------------|----------------------------|----------|-----------|-------------------|----------|----------|----------|----------------------------|
| Parameters | Product stage | Construction process stage | | Use stage | End-of-life stage | | | | Reuse, recovery, recycling |
| | A1–A3 | A4 | A5 | B1–B7 | 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 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
|  Materials for recycling [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 |
|  Materials for energy recovery [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 |
|  Exported energy [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 |








ADDITIONAL INDICATORS FROM EN 15804

| Environmental impacts | | | | | | | | | |
|---|---------------|----------------------------|----------|-----------|-------------------|----------|----------|----------|----------------------------|
| Parameters | Product stage | Construction process stage | | Use stage | End-of-life stage | | | | Reuse, recovery, recycling |
| | A1–A3 | A4 | A5 | B1–B7 | C1 | C2 | C3 | C4 | D |
|  GWP-GHG [kg CO2 eq.] | 6.86E-01 | 5.14E-02 | 4.02E-03 | 0.00E+00 | 0.00E+00 | 5.06E-03 | 0.00E+00 | 1.65E-02 | 0.00E+00 |

GWP-GHG is calculated with the same characterisation factors as in EN 15804+A2 (EN 15804 EF 3.1).




APPENDIX: ENVIRONMENTAL IMPACTS ACCORDING TO EN 15804:2012+A1 AND CML 2001 AND RECIPE 2016

| Parameters | Product stage | Construction process stage | | Use stage | End-of-life stage | | | | Reuse, recovery, recycling |
|---|---------------|----------------------------|-----------|-----------|-------------------|-----------|----------|----------|----------------------------------|
| | A1–A3 | A4 | A5 | B1–B7 | C1 | C2 | C3 | C4 | D |
|  Global Warming Potential (GWP) [kg CO ₂ eq.] | 6.41E-01 | 4.89E-02 | 3.78E-03 | 0.00E+00 | 0.00E+00 | 4.81E-03 | 0.00E+00 | 1.48E-02 | 0.00E+00 |
|  Ozone Depletion Potential (ODP) [kg R11 eq.] | 4.83E-08 | 6.61E-15 | 4.15E-16 | 0.00E+00 | 0.00E+00 | 6.50E-16 | 0.00E+00 | 7.83E-17 | 0.00E+00 |
|  Acidification potential (AP) [kg SO ₂ eq.] | 2.89E-03 | 6.49E-05 | 8.32E-06 | 0.00E+00 | 0.00E+00 | 6.39E-06 | 0.00E+00 | 8.57E-05 | 0.00E+00 |
|  Eutrophication potential (EP) [kg (PO ₄) ³⁻ eq.] | 1.43E-03 | 1.38E-05 | 1.34E-06 | 0.00E+00 | 0.00E+00 | 1.36E-06 | 0.00E+00 | 9.72E-06 | 0.00E+00 |
|  Photochemical ozone creation (POPC)[Ethene eq.] | 4.38E-04 | -1.95E-05 | -8.81E-07 | 0.00E+00 | 0.00E+00 | -1.92E-06 | 0.00E+00 | 6.58E-06 | 0.00E+00 |
|  Abiotic depletion potential for non-fossil resources (ADP-elements) [kg Sb eq.] | 3.97E-06 | 6.77E-10 | 1.14E-10 | 0.00E+00 | 0.00E+00 | 6.66E-11 | 0.00E+00 | 1.44E-09 | 0.00E+00 |
|  Abiotic depletion potential for fossil resources (ADP-fossil fuels) [MJ/FU] | 1.19E+01 | 6.56E-01 | 5.05E-02 | 0.00E+00 | 0.00E+00 | 6.45E-02 | 0.00E+00 | 1.95E-01 | 0.00E+00 |

GWP over the full life-cycle A1 to C4 sums up to **0.71 kgCO₂eq.** per kg.

ReCiPe 2016

The "ReCiPe 2016 v1.1 Endpoint (H) - Land Use" indicator measures the impact of land use on biodiversity, specifically focusing on the potential loss of species due to the occupation and transformation of land. Expressed in species*year, this indicator reflects the extent to which land use activities associated with the product contribute to the degradation of ecosystem quality and biodiversity loss over time. It is an important metric for understanding the environmental impacts construction products have on land use and terrestrial ecosystems.

| Parameters | Product stage | Construction process stage | | Use stage | End-of-life stage | | | | Reuse, recovery, recycling |
|--|---------------|----------------------------|----------|-----------|-------------------|----------|----------|----------|----------------------------------|
| | A1–A3 | A4 | A5 | B1–B7 | C1 | C2 | C3 | C4 | D |
|  Biodiversity impact (land use) [species*year] | 6.30E-02 | 2.51E-05 | 2.05E-05 | 0.00E+00 | 0.00E+00 | 2.47E-06 | 0.00E+00 | 3.79E-04 | 0.00E+00 |

REFERENCE LIST

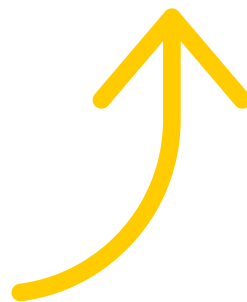
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