
# ENVIRONMENTAL PRODUCT DECLARATION

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

# Vertex Mesh R121 A101

**from: Saint-Gobain ADFORS CZ, s.r.o**

**Version 1**
**Publication date: 2024-04-04**
**Validity: 5 years**
**Valid until: 2029-04-03**

**Scope of the EPD®: Europe**

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

**Programme operator: EPD International AB**

**Production plant: Saint-Gobain ADFORS CZ, s.r.o;**
**Sokolovská 106 570 01 Litomyšl; The Czech Republic**

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.

**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**

**Registration number**
**The International EPD® System: S-P-12804**

# General information

## Company information

**Manufacturer:** Saint-Gobain ADFORS CZ, s.r.o - Sokolovská 106 570 01 Litomyšl (The Czech Republic). https://eu.adfors.com/

**Production plant:** Sokolovská 106 570 01 Litomyšl (The Czech Republic)

**Framework:** The LCA is based on 2022 production data for one site in Czech Republic.

**Geographical scope :** Europe

**UN CPC CODE:** 37129 Veils, webs, mats, mattresses, boards, and other articles of glass fibres, except woven fabrics

**Owner of the declaration:** Saint-Gobain ADFORS CZ, s.r.o

**Product name and manufacturer represented**: Vertex Mesh R121 A101. Saint-Gobain ADFORS CZ, s.r.o

This EPD covers Cradle to gate with options, module C1-C4 and module D and optional modules (A4-A5 and B1-B7) as defined in EN 15804:2012 + A2:2019/AC:2021

**EPD® prepared by:** Lucie Waniausova (Saint-Gobain ADFORS CZ, s.r.o., lucie.waniausova@saint-gobain.com) & Sandra Perez-Jimenez (Saint-Gobain LCA central team, sandra.perez-jimenez@saint-gobain.com) & William Guerin (Saint-Gobain ADFORS central team, william.guerin@saint-gobain.com)

The intended use of this EPD is for B2B communication.

**EPD® registration number:** S-P-12804

**Declaration issued:** 2024-04-04, **valid until:** 2029-04-03

**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 | **E-mail:** | info@environdec.com |

| |
|---|
| CEN standard EN 15804:2012 + A2:2019/AC:2021 serves as the Core Product Category Rules (PCR) |
| Product category rules (PCR): PCR 2019:14 Construction Products, version 1.3.2 |
| PCR review was conducted by: "The Technical Committee of the International EPD® System. See www.environdec.com for a list of members. Review chair: Claudia A. Peña, University of Conception, 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:<br>☒ EPD verification by individual verifier |
| LCA Accountability: Sandra Perez-Jimenez – Saint-Gobain Expertise and Services<br>William Guerin – Saint-Gobain ADFORS |
| Third party verifier : Marcel Gomez<br>Marcel Gómez Consultoria Ambiental Tlf 0034 630 64 35 93 - info@marcelgomez.com<br>Approved by: The International EPD© System |
| Procedure for follow-up of data during EPD validity involves third part verifier:<br>☒ Yes ☐ No |

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

# Product Information

## Product information and description of use

Vertex® ETICS (External Thermal Insulation Composite System) is a reinforcing fiberglass mesh used in building construction for external wall applications. The reinforcement mesh has a high tensile strength and low elongation to prevent the formation of cracks, and an alkali-resistant coating to protect the wall mesh while the render dries. The mesh is produced from glass fiber known for its stable fabric quality, and the fiberglass render mesh is also easy to cut and apply, making it the ideal solution for external reinforcement.

ADFORS Vertex® is CE certified according to ETA-13/0392.
Glass fiber mesh fabrics combined with specially designed mesh surface treatments can be used in a wide range of applications.

In all configurations, glass fiber is used as the base, high quality coating is used as a treatment.

## Technical characteristics for product Vertex Mesh R121 A101

| Characteristic | Performance | Unit | Standard |
|---|---|---|---|
| Tensile Strength (warp/weft) | min 1900 / min 1900 | (N/5 cm) | ISO 13934-1 |
| Elongation (warp/weft) | max 5,0 / max 5,0 | (%) | |
| Tensile strength after alkali conditioning (warp/weft) | min 1000 / min 1000 | (N/5 cm) | |

## Declaration of the main product components and/or materials within Vertex Mesh R121 A101

Description of the main components and/or materials for 1 $m^2$ of Vertex Mesh R121 A101 :

| Product components | Weight % | Post-consumer recycled material (Weight %) | Biogenic Material (Weight % and kgC/kg) |
|---|---|---|---|
| Glass Yarn | 60 - 80 | 0 | 0 resp. 0 |
| Coating | 40 - 20 | 0 | 1% - 5 % resp. 0,46 |
| **Product** | **Weight (kg/m²)** | | |
| **Vertex Mesh R121 A101** | **0,153** | **0** | 0,2% - 2 % resp. 0,46 |
| **Packaging materials** | **Weight (kg/m²)** | **Weight%** | **Weight Biogenic carbon (kg C/kg)** |
| Wooden Pallet | 1,60E-02 | 10,73% | 0,41 |
| Low-density polyethylene (LDPE) | 4,40E-04 | 0,28% | 0 |
| Paper label & Tube | 1,30E-03 | 0,82% | 0,43 |
| Polyethylene Tape | 1,80E-05 | 0,01% | 0 |
| Cardboard | 6,00E-03 | 3,93% | 0,45 |

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

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

# LCA calculation information

| | |
|---|---|
| **EPD scope** | Cradle to gate with options, module C1-C4 and module D and optional modules (A4-A5 and B1-B7) |
| **Declared Unit** | 1 m² of Vertex Mesh R121 A101 (0,153 kg/m²) installed and with an estimated useful life of 50 years |
| **System boundaries** | Mandatory stages: A1-A3; C1-C4 and D and optional modules A4-A5 and B1-B7 |
| **Service life (SL)** | The Service Life (SL) of a Vertex Mesh is 50 years. This value is the one commonly used in the main application for Vertex Mesh which is reinforcement for ETICS (External Thermal Insulation Composite System). |
| **Cut-off rules** | The LCI data shall include, in accordance with EN 15804, a minimum of 95% of the total input flows (mass and energy) per module (e.g. A1-A3, A4-A5, B1-B5, B6-B7, C1-C4 and module D). In addition, this PCR applies the extended cut-off rule of ISO 21930, which states at least 95% of the environmental impact per module. Plausibility assessments and expert judgement may be used to demonstrate compliance with these criteria |
| **Allocations** | Allocation has been avoided when possible.<br>The polluter pays, and modularity principles have been followed |
| **Geographical coverage and period** | Data included is collected from 1 production site in Litomysl (The Czech Republic)<br>Production year from 2022<br>Background data: Ecoinvent v3.8 (2022) and GaBi ts 2022 |

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.

As stated in the PCR 1.3.2, module C being included in this EPD, it is advised to consider module C when comparing results from modules A1-A3.

## LCA scope

**System boundaries (X=included. MND=module not declared)**

| | PRODUCT STAGE | | | CONSTRUCTION STAGE | | USE STAGE | | | | | | | END OF LIFE STAGE | | | | BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Raw material supply | Transport | Manufacturing | Transport | Construction-Installation process | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal | Reuse-recovery |
| Module | A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
| Modules declared | X | | | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Geography | EU27 | | CZ | EU27 | EU27 | EU27 | EU27 | EU27 | EU27 | EU27 | EU27 | EU27 | EU27 | EU27 | EU27 | EU27 | EU27 |
| Share of specific data | >90% GWP- GHG | | | | | | | | | | | | | | | | |
| Variation products | 0% | | | | | | | | | | | | | | | | |
| Variation sites | 0% | | | | | | | | | | | | | | | | |

## A1-A3, Product stage

**Description of the stage:** the product stage of the Vertex Mesh product is subdivided into 3 modules A1, A2 and A3 respectively “Raw materials supply”, “Transport to the manufacturer” and “Manufacturing”.

The aggregation of the modules A1, A2 and A3 is mandatory by the EN 15 804 standard. This rule is applied in this EPD.

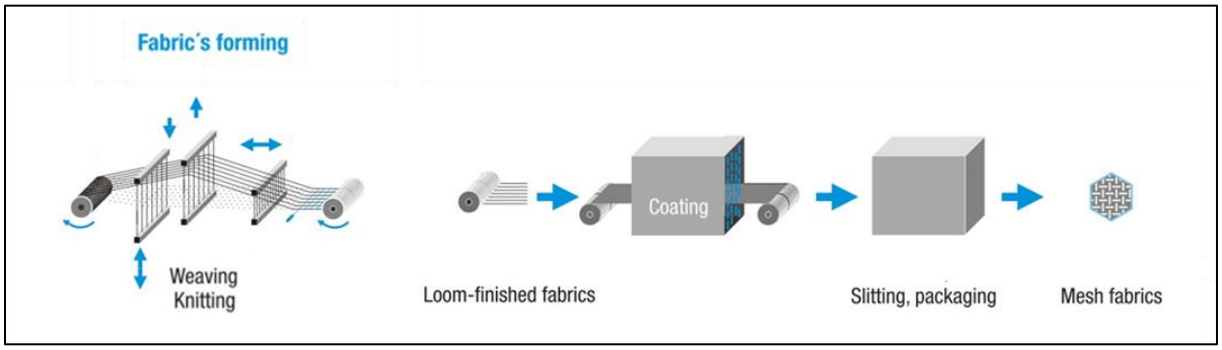
**Description of the scenarios and other additional technical information**:

**A1, Raw materials supply**
This module considers the extraction and processing of all raw materials and energy which occur upstream to the studied manufacturing process. Specifically, the raw material supply covers production of the coating components (binder + additives) and the glass yarn.

**A2, Transport to the manufacturer**
The raw materials are transported to the manufacturing site. In our case, the modeling includes road (average values) of each raw material.

**A3, Manufacturing**
This module includes the manufacturing of the product and packaging. Specifically, it covers the manufacturing of Vertex Mesh and the packaging.

To produce meshes, glass yarns are woven or knitted then the fabric can be winded on a tube to be coated later or passed under a binder applicator where liquid resin formulation will be applied. After application of the binder, the mesh then passes through an oven to be dried. The final product is then winded on a cardboard tube then packaged.




**Vertex Mesh production process**

Vertex Mesh products manufacturing is a complex product system with a range of input materials and variety of the product outputs. Mass based physical allocation was applied to split the environmental burden among the Vertex Mesh life cycle.

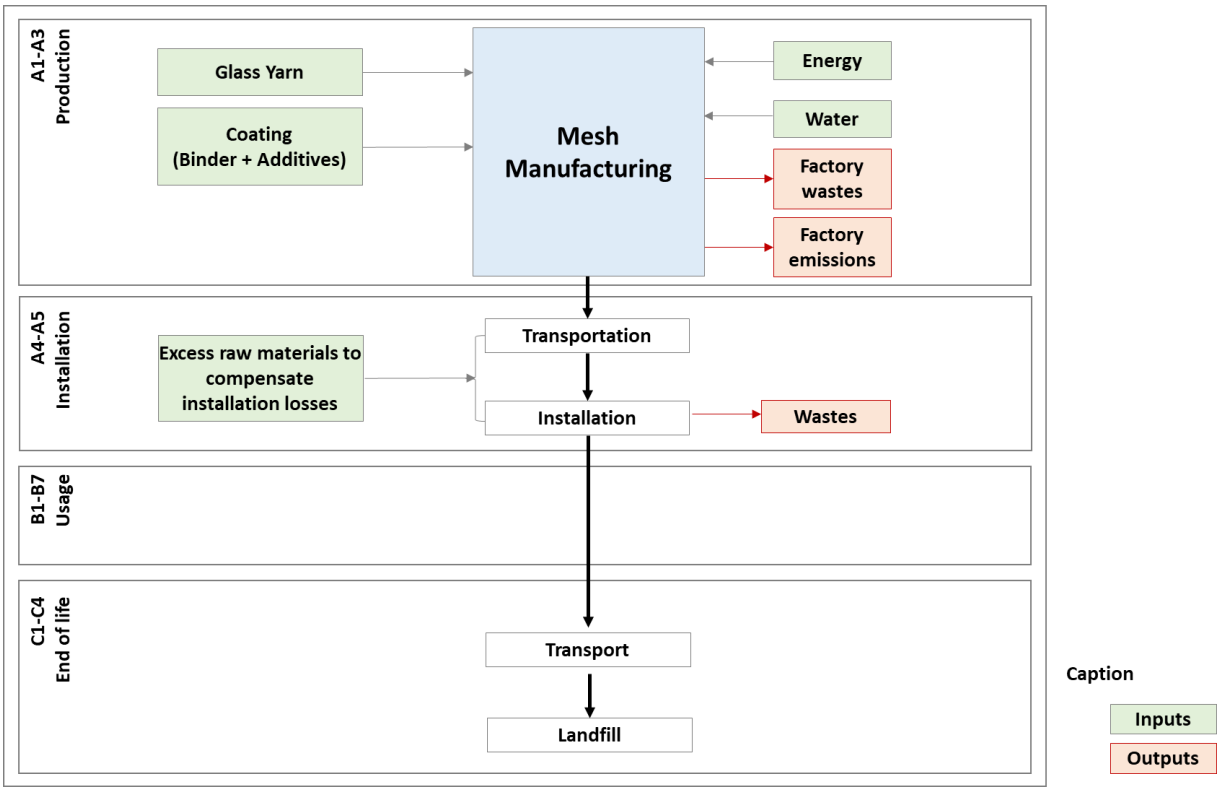
The EPD represents sales of product sold in Europe. The manufacturing site Litomysl is based in Czech Republic and use 100% nuclear electricity.

| TYPE OF INFORMATION | DESCRIPTION |
|---|---|
| **Location** | Nuclear electricity purchased by Saint-Gobain ADFORS CZ, s.r.o |
| **Geographical representativeness description** | 100% Nuclear – Czech Republic |
| **Reference year** | 2022 |
| **Type of data set** | Cradle to gate Electricity from nuclear power plant from Sphera Dataset |
| **Source** | Background data: Sphera database 2019: dataset valid until 2025 |
| **Emissions kg $CO_2$ eq. / kWh** | 4,65E-03 kg CO2 eq. / kWh |

This module also includes the emissions and wastes generated during manufacturing. Waste produced during manufacturing represents around 10% of total production in 2022.

Wastes leaving the plant are sent to landfill and are transported over 50 km.

## Manufacturing process flow diagram




## A4-A5, Construction process stage

**Description of the stage:** the construction process is divided into 2 modules: A4, transport to the building site and A5, installation. Since there is a product loss during installation (3 %). The quantification of raw material compensation (A5) and its transport to the building site (A4) are considered.

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

| PARAMETER | VALUE |
|---|---|
| **Fuel type and consumption of vehicle or vehicle type used for transport e.g., long distance truck, boat, etc.** | Average truck trailer (27 t payload) with a real 24 t payload, diesel consumption 38 liters for 100 km |
| **Distance** | 780 km. Average distance between production site and customer facilities |
| **Capacity utilisation (including empty returns)** | Use of GaBi data, default: 85% of mass capacity 30% empty returns |
| **Bulk density of transported products** | 278 kg/m$^3$ (weight of 1m² of Vertex Mesh R121/ thickness in meter) |
| **Volume capacity utilisation factor** | Coefficient < 1 |

**A5, Installation in the building:** this module includes:

Since the applications of the reported product are diverse, no additional accessory or energy were considered for the installation phase of the product.

| PARAMETER | VALUE/DESCRIPTION |
|---|---|
| **Quantity of Vertex Mesh for 1 m² of product** | 0,153 kg/m² (Glass Yarn + Coating) |
| **Thickness** | 0,55 mm |
| **Auxiliary inputs for the installation** | The installation method differs from the final user. This stage has not been described nor assessed |
| **Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)** | 3% |
| **Distance** | 50 km to landfill by truck |
| **Output materials (specified by type) as results of waste processing at the building site e.g., of collection for recycling, for energy recovering, disposal (specified by route)** | According to the European website "eurostat" pallets are: 31% recycled and 69% sent to landfill and 80% of cardboard is recycled and 20% is sent to landfill.<br><br>Cardboard 6,00E-03 kg/m²<br>Wooden Pallet 1,60E-02 kg/m²<br><br>The rest of wastes produced during installation are sent to landfill:<br><br>3% waste of Vertex Mesh R121 during use equivalent to 4,6 g/m²<br><br>Low density polyethylene stretch film (LDPE) 4,40E-04 kg/m²<br><br>Paper label 1,30E-03 kg/m²<br><br>Polyethylene Tape 1,80E-05 kg/m²<br><br>The distances used for the landfill and recycling center are 50 km |

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

**Description of the stage:** the use stage is divided into the following modules:

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

**Description of the scenarios and additional technical information:**

As no maintenance, repair, replacement, and refurbishment are required after use of Vertex Mesh by customer, no impact has been accounted for in this phase.

## C1-C4, End of Life Stage

**Description of the stage:** this stage includes the next modules:

**C1, Deconstruction, demolition**

The de-construction and/or dismantling of Vertex Mesh products take part of the demolition of the entire building.

**C2, Transport to waste processing**

The model use for the transportation (see A4, transportation to the customer site) is applied.

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

The product is landfilled without reuse, recovery, or recycling.

### C4, Disposal

The Vertex Mesh is assumed to be 100% landfilled.

**End of life:**

| Parameter | Value/description |
|---|---|
| **Collection process specified by type** | The entire product is collected alongside any mixed construction waste and sent to landfill<br>0,153 kg of Vertex Mesh R121 A101 (collected with mixed construction waste) |
| **Recovery system specified by type** | There is no known recovery, recycling, or reuse of the product once it has reached its end-of-life phase. |
| **Disposal specified by type** | The product alongside the mixed construction waste from demolishing will go to landfill<br>0,153 kg of Vertex Mesh R121 A101 are landfilled |
| **Assumptions for scenario development (e.g. transportation)** | The product alongside the mixed construction waste from demolishing will go to landfill<br>The waste going to landfill will be transported by truck with 27 t payload, using diesel as a fuel consuming 38 liters per 100km<br>Distance covered is 50 km |

## D, Reuse/recovery/recycling potential

According to the figures reported in 2019 for Europe: 80% of cardboard packaging is recycled and the remaining 20% are sent to landfill. 31% of pallets are recycled and 69% are sent to landfill. The rest of the waste produced are landfilled. Hence, only recycling benefits for packaging are reported on stage D.

# LCA results

As specified in EN 15804:2012+A2:2019/AC:2021 and the PCR 2019:14 Construction Products, version 1.3.2. The environmental impacts are declared and reported using the baseline characterization factors are from the ILCD. Raw materials and energy consumption, as well as transport distances have been taken directly from the manufacturing plant (Production data according 2022). Characterisation factors EN15804 based on EF 3.1.

According to the EN 15804:2012+A2:2019/AC:2021 standard, the LCIA results are relative expressions translating impacts into environmental indicators (midpoint impact categories). Thus, 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 the results refer to a Vertex Mesh R121 A101 with a weight of 0,153 kg/$m^2$.

# Environmental Impacts

| | | Product stage | Construction stage | | Use stage | | | | | | | End of life stage | | | | Reuse, Recovery Recycling |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Environmental indicators** | A1 / A2 / A3 | A4 Transport | A5 Installation | B1 Use | B2 Maintenance | B3 Repair | B4 Replacement | B5 Refurbishment | B6 Operational energy use | B7 Operational water use | C1 Deconstruction / demolition | C2 Transport | C3 Waste processing | C4 Disposal | D Reuse, recovery, recycling |
|  | Climate Change [kg $CO_2$ eq.] | **1,62E-01** | **8,08E-03** | **4,20E-02** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **6,33E-04** | **5,64E-04** | **0** | **2,09E-03** | **2,05E-05** |
| | Climate Change (fossil) [kg CO2 eq.] | **1,98E-01** | **8,00E-03** | **6,00E-03** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **6,33E-04** | **5,58E-04** | **0** | **2,00E-03** | **-6,85E-07** |
| | Climate Change (biogenic) [kg $CO_2$ eq.] | **-3,61E-02** | **0** | **3,60E-02** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **7,85E-05** | **2,12E-05** |
| | Climate Change (land use change) [kg $CO_2$ eq.] | **6,54E-05** | **7,87E-05** | **4,69E-06** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **6,69E-08** | **5,20E-06** | **0** | **7,33E-06** | **3,50E-09** |
|  | Ozone depletion [kg CFC-11 eq.] | **9,31E-09** | **7,44E-16** | **2,79E-10** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1,35E-10** | **4,91E-17** | **0** | **6,00E-15** | **-1,10E-13** |
|  | Acidification [Mole of H+ eq.] | **4,74E-04** | **9,78E-06** | **1,50E-05** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **6,58E-06** | **6,46E-07** | **0** | **1,67E-05** | **-1,20E-08** |
|  | Eutrophication aquatic freshwater [kg P eq.] | **6,73E-06** | **3,10E-08** | **2,03E-07** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1,96E-08** | **2,05E-09** | **0** | **4,75E-09** | **-1,51E-09** |
| | Eutrophication aquatic marine [kg N eq.] | **2,01E-04** | **3,37E-06** | **6,26E-06** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **2,92E-06** | **2,23E-07** | **0** | **4,32E-06** | **1,13E-09** |
| | Eutrophication terrestrial [Mole of N eq.] | **2,11E-03** | **3,98E-05** | **6,72E-05** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **3,19E-05** | **2,63E-06** | **0** | **4,76E-05** | **-3,02E-08** |
|  | Photochemical ozone formation [kg NMVOC eq.] | **4,99E-04** | **8,51E-06** | **1,56E-05** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **8,78E-06** | **5,62E-07** | **0** | **1,30E-05** | **-1,44E-08** |
|  | Depletion of abiotic resources - mineral and metals [kg Sb eq.][1] | **1,29E-07** | **5,48E-10** | **3,90E-09** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **3,26E-10** | **3,62E-11** | **0** | **1,09E-10** | **-1,01E-11** |
| | Depletion of abiotic resources – fossil fuels [MJ][1] | **5,48E+00** | **1,16E-01** | **1,69E-01** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **9,00E-03** | **8,00E-03** | **0** | **3,10E-02** | **-2,33E-05** |
|  | Water use [m³ world equiv.][1] | **6,70E-02** | **9,79E-05** | **2,00E-03** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **2,13E-05** | **6,47E-06** | **0** | **2,59E-04** | **-1,32E-06** |

[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

# Resources Use

| | Resources Use indicators | Product stage | Construction stage | | Use stage | | | | | | | End of life stage | | | | D Reuse, recovery, recycling |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A1 / A2 / A3 | A4 Transport | A5 Installation | B1 Use | B2 Maintenance | B3 Repair | B4 Replacement | B5 Refurbishment | B6 Operational energy use | B7 Operational water use | C1 Deconstruction / demolition | C2 Transport | C3 Waste processing | C4 Disposal | D Reuse, recovery, recycling |
|  | Use of renewable primary energy excluding renewable primary energy resources used as raw materials (PERE) [MJ] | 1,19E-01 | 8,00E-03 | 4,00E-03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4,90E-05 | 5,40E-04 | 0 | 5,00E-03 | -2,20E-04 |
|  | Use of renewable primary energy resources used as raw materials (PERM) [MJ] | 1,05E-01 | 0 | 3,00E-03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | Total use of renewable primary energy resources (PERT) [MJ] | 2,23E-01 | 8,00E-03 | 7,00E-03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4,90E-05 | 5,40E-04 | 0 | 5,00E-03 | -2,20E-04 |
|  | Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (PENRE) [MJ] | 5,48E+00 | 1,16E-01 | 1,69E-01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9,00E-03 | 8,00E-03 | 0 | 3,10E-02 | -2,33E-05 |
|  | Non-renewable primary energy resources used as raw materials (PENRM) [MJ] | 9,04E-04 | 0 | 2,71E-05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | Total use of non-renewable primary energy resources (PENRT) [MJ] | 5,48E+00 | 1,16E-01 | 1,69E-01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9,00E-03 | 8,00E-03 | 0 | 3,10E-02 | -2,33E-05 |
|  | Use of secondary material (SM) [kg] | 8,52E-04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | Use of renewable secondary fuels (RSF) [MJ] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | Use of non-renewable secondary fuels (NRSF) [MJ] | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|  | Net use of fresh water (FW) [m3] | 1,20E-03 | 9,01E-06 | 5,07E-05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4,96E-07 | 5,95E-07 | 0 | 7,93E-06 | -3,08E-08 |

# Waste Category & Output flows

| Waste Category & Output Flows | Product stage | Construction stage | | Use stage | | | | | | | End of life stage | | | | D Reuse, recovery, recycling |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A1 / A2 / A3 | A4 Transport | A5 Installation | B1 Use | B2 Maintenance | B3 Repair | B4 Replacement | B5 Refurbishment | B6 Operational energy use | B7 Operational water use | C1 Deconstruction / demolition | C2 Transport | C3 Waste processing | C4 Disposal | D Reuse, recovery, recycling |
| Hazardous waste disposed (HWD) [kg] | **4,81E-10** | **4,29E-13** | **1,45E-11** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **2,83E-14** | **0** | **6,84E-13** | **1,12E-15** |
| Non-hazardous waste disposed (NHWD) [kg] | **2,10E-02** | **1,67E-05** | **5,00E-03** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **1,10E-06** | **0** | **1,57E-01** | **4,63E-12** |
| Radioactive waste disposed (RWD) [kg] | **6,98E-04** | **1,50E-07** | **2,10E-05** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **9,89E-09** | **0** | **3,58E-07** | **4,04E-14** |
| Components for re-use (CRU) [kg] | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| Materials for Recycling (MFR) [kg] | **1,41E-04** | **0** | **9,76E-03** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **5,08E-06** |
| Materials for Energy Recovery (MER) [kg] | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |
| Exported energy (EE) [MJ] | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** |

# Additional mandatory indicators from EN 15804

| | Product stage | Construction stage | | Use stage | | | | | | | End of life stage | | | | Reuse, Recovery Recycling |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Environmental indicators** | A1 / A2 / A3 | A4 Transport | A5 Installation | B1 Use | B2 Maintenance | B3 Repair | B4 Replacement | B5 Refurbishment | B6 Operational energy use | B7 Operational water use | C1 Deconstruction / demolition | C2 Transport | C3 Waste processing | C4 Disposal | D Reuse, recovery, recycling |
| GWP-GHG [kg $CO_2$ eq.][2] | **2,12E-01** | **9,00E-03** | **7,00E-03** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **6,33E-04** | **5,66E-04** | **0** | **2,00E-03** | **2,12E-05** |

[2] The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

## Information on biogenic carbon content

| | | Product stage |
|---|---|---|
| Biogenic Carbon Content | | A1 / A2 / A3 |
|  | Biogenic carbon content in product [kg] | 2,14E-05 |
|  | Biogenic carbon content in packaging [kg] | 9,82E-03 |

*Note: 1 kg biogenic carbon is equivalent to 44/12 kg $CO_2$.*

The biogenic carbon content in the product comes from the additives used in the coating formulation. The biogenic carbon content for packaging is quantified for the wooden pallet, for the paper label and the paper cores.

# Environmental impacts according to EN 15804:2012 + A1

The following tables presents results of a Vertex Mesh R121 A101 (0,153 kg/m²) according to EN 15804 + A1.

| | | Product stage | Construction stage | | Use stage | | | | | | | End of life stage | | | | Reuse, recovery, recycling |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A1 / A2 / A3 | A4 Transport | A5 Installation | B1 Use | B2 Maintenance | B3 Repair | B4 Replacement | B5 Refurbishment | B6 Operational energy use | B7 Operational water use | C1 Deconstruction / demolition | C2 Transport | C3 Waste processing | C4 Disposal | D Reuse, recovery, recycling |
| Environmental impacts | Global Warming Potential (GWP) [kg $CO_2$eq.] | 2,02E-01 | 8,00E-03 | 6,00E-03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6,26E-04 | 5,51E-04 | 0 | 2,00E-03 | -4,66E-07 |
| | Ozone depletion (ODP) [kg CFC 11eq.] | 1,17E-08 | 7,88E-19 | 3,50E-10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,07E-10 | 5,20E-20 | 0 | 7,02E-18 | -8,66E-14 |
| | Acidification potential (AP) [kg $SO_2$eq.] | 3,37E-04 | 7,10E-06 | 1,07E-05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4,69E-06 | 4,69E-07 | 0 | 1,34E-05 | -1,01E-08 |
| | Eutrophication potential (EP) [kg $(PO_4)_3$-eq.] | 9,56E-05 | 1,71E-06 | 2,98E-06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,17E-06 | 1,13E-07 | 0 | 1,53E-06 | -2,09E-09 |
| | Photochemical ozone creation (POCP) - [kg Ethylene eq.] | 3,15E-05 | 8,22E-07 | 1,00E-06 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4,52E-07 | 5,43E-08 | 0 | 1,09E-06 | -1,62E-09 |
| | Abiotic depletion potential for non-fossil resources (ADP-elements) [kg Sb eq.] | 1,17E-05 | 6,39E-10 | 3,51E-07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3,21E-10 | 4,22E-11 | 0 | 7,18E-10 | -1,07E-11 |
| | Abiotic depletion potential for fossil resources (ADP-fossil fuels) [MJ] | 3,46E+00 | 1,15E-01 | 1,08E-01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9,00E-03 | 8,00E-03 | 0 | 3,00E-02 | -1,52E-05 |

# Appendix:

## Data quality

Inventory data quality is judged by geographical, temporal, and technological representativeness. To cover these requirements and to ensure reliable results, first-hand industry data crossed with LCA background datasets were used. The data was collected from internal records and reporting documents from Saint-Gobain ADFORS CZ, s.r.o. After evaluating the inventory, according to the defined ranking in the LCA report, the assessment reflects fair inventory data quality for the geographical representation, fair for technological and good for temporal representation.

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