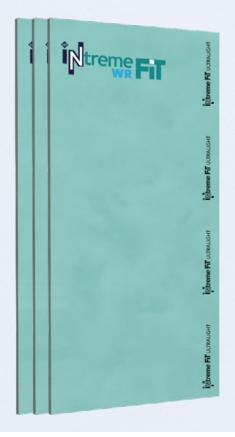
# ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021 **ABS Intreme Fit WR** EXTERIOR SYSTEMS PLASTERBOARD 12.5 mm

by ABS Gypsum



Programme: The International EPD® System www.environdec.com Programme Operator: EPD International AB Licensee: EPD Türkiye EPD Registration Number: EPD-IES-0024446 Publication Date: 2025-06-19 Validity Date: 2030-06-18 Geographical Scope: Global

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

see www.environdec.com.









### **Programme Information**

The International EPD® System: EPD International AB Box 210 60 SE-100 31 Stockholm, Sweden, info@environdec.com

### **Product Category Rules (PCR)**

CEN standard EN 15804 serves as the core Product Category Rules (PCR), PCR 2019:14 Construction products, version 1.3.4, Construction EN 15804:2012+A2:2019/AC:2021 Sustainability of Construction Works

PCR review was conducted by: The Technical Committee of the International EPD® System. Review chair: Claudia A. Peña, University of Concepción, Chile

For further information about comparability, see EN 15804 and ISO 14025.

External and independent ('third-party') verification of the declaration and data, according to ISO 14025:2006, via: EPD verification through an individual EPD verification

Third party individual verifier: Agnieszka Pikus, Greenwise Approved by: The International EPD® System

Procedure for follow-up of data during EPD validity involves third party verifier: No X Yes

Life Cycle Assessment (LCA) accountability: Orhan Atacan - Metsims Sustainability Consulting

ABS ALCI VE BLOK SAN. A.Ş. has the sole ownership, liability, and responsibility for this EPD.

EPDs within the same product category but registered in different EPD programmes 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. The EPD owner has the sole ownership, liability, and responsibility for this EPD.

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An Environmental Product Declaration (EPD) is an ISO Type III Environmental Declaration based on ISO 14025 standard. An EPD transparently reports the environmental performance of products or services from a lifecycle perspective. The preparation of an EPD includes different stages, from acquiring raw materials to the end of life of the final product/service. EPDs are based on international standards and consider the entire value chain. Additionally, EPD is a third-party verified document. This EPD includes several sections described below.

### 1. General and Program Information

The first part of an EPD has information about the name of the manufacturer and product/service and other general information such as the validity and expiration dates of the document, the name of the program operator, geographical scope, etc. The second page states the standards followed and gives information about the program operator, thirdparty verifier, etc. The followed Product Category Rule (PCR) is indicated on the second page.

### 2. Company and Product/Service Information

Information about the company and the investigated product is given in this section. It summarizes the characteristics of the product provided by the manufacturer. It also includes information about the product such as product composition and packaging.

### 3. LCA Information

LCA information is one of the most important parts of the EPD as it describes the functional/ declared unit, time representativeness of the study, database(s) and LCA software, along with system boundaries. The table presented in this part has columns for each stage in the life cycle. The considered stages are marked 'X' whereas the ones that are not declared are labeled as 'ND'. Not all EPDs consider the full life cycle assessment for a product's entire life stages. The 'System Boundary' page is also the place where one can find detailed information about the stages and the assumptions made.

### **4. LCA Results**

The results of the Life Cycle Assessment analysis are presented in table format. The first column in each table indicates the name of the impact category and their measurement units are presented in the second column. These tables show an amount at each life cycle stage to see the impact of different indicators on different stages. Each impact can be understood as what is released through the production of the declared unit of the material—in this case, life time of electricity generator set. The first impact in the table is global warming potential (GWP), which shows how much CO2 is released at each stage. Other impacts include eutrophication potential, acidification potential, ozone layer depletion, land use related impacts, etc. The second table provides results for resource use and the third table is about the waste produced during the production. The fourth and final table shows the results for the GWP-GHG indicator, which is almost equivalent to the GWP-Total indicator mentioned previously. The only difference is that this indicator excludes the biogenic carbon content by following a certain methodology.

## About ABS Gypsum



#### Owner of the EPD: ABS Gypsum

Head Office: Küçükbakkalköy Mah. Merdivenköy Yolu Cad. No:6 34750 İstanbul/Türkiye

Production Plant: Atalar Mh., Abs Alçı Fbr., 33400 Yenice Bld. Tarsus/Mersin/ Türkiye

ABS Gypsum's vision is to produce high technology and quality products for the buildings of the future with durable natural and healthy gypsum-based materials that allow freedom and convenience in design. ABS Gypsum is the first producer of satin plaster in the world and Türkiye's first industrial plaster and first&only ultralight and sustainable plasterboards.

ABS Gypsum continues its production with more than 60 years of experience in the plaster industry in line with its goal of sustainable leadership in quality. ABS Gypsum started production in 1982 in Bilecik/Bozüyük and now has production facilities in 6 locations in Türkiye; Ankara/Gölbaşı, Mersin/Tarsus, Erzurum/Aşkale, Sivas/ Demirağ Organize Sanayi and a powder gypsum plant in Ukraine/Çernovtsi. The company has an another gypsum brand namely BMT Gypsum operating also in Sivas since 2004.

The ultralight plasterboard Intreme FiT was awarded the Silver Plumb in the "Innovative Product" category in the 27th Golden Plumb International Building Catalogue Awards in 2021. Türkiye's first sustainable & ultralight exterior plasterboard Extreme was awarded twice in the "Collaboration" category at the Sustainable Business Awards in 2023 and in the "Sustainable Collaboration" category at the "Green Transformation Awards" organized by the İstanbul Chamber of Industry in 2024.

## **Product Information**

ABS Intreme Fit WR, is the lightest water resistance indoor plasterboard in the industry through its weighing only 5.8 kg / m<sup>2</sup> that has structural strength and durability above standards, is stronger & more flexible with reinforced chamfer edges, can be cut smoother and easier. It is covered with green colored paper on the front and gray colored paper on the back.

The product UN CPC code is 37530 according to Central Product Classification (CPC) Version 2.1.

- Sustainable
- Ultra-lightweight (5.8 kg/m<sup>2</sup>) .
- Improved sag resistance
- High power-to-weight ratio
- Low dust emission for safer work environment
- Damage resistance during transportation
- Reinforced chamfer edges
- Flexible and easy application
- Quick and easy installation
- Smooth cutting
- Enhanced moisture resistance
- Can be covered with tiles, ceramics, etc.
- Optimized space usage

### **Application Area**

It is used on the partition walls, lining walls and suspended ceilings indoors where resistance against water and moisture is required.

### **Technical Specifications**

| Property  | Value                                |
|---|--------------------------------------|
| Length  | 2000 - 3600 mm                       |
| Width   | 1200 mm                              |
| Thickness                                       | 12.5 mm                              |
| Weight  | 5,8 ± 0,2 kg/m²                      |
| Density   | 464 ± 16 kg/m³                       |
| Flexural Breaking Load (Longitudinal Direction) | ⊅ 550 N                              |
| Flexural Breaking Load (Transverse Direction)   | ⊅ 210 N                              |
|   | H1 k 5%                              |
| Total Water Absorption (by weight)              | H2 k % 10                            |
|   | H3 k % 25                            |
| Edge Type                                       | IK (Tapered Edge) – KK (Square Edge) |
| Thermal Conductivity Value (λ)                  | 0.25 W/(m·K)                         |
| Water Vapour Resistance Factor (µ)              | 10                                   |
| Class of Reaction to Fire                       | A2-s1, d0                            |
| Standard  | TS EN 520+A1                         |
| Board Type                                      | Туре Н1 - Н2 - Н3                    |

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|---|--------------------------------------|
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| Standard  | TS EN 520+A1                         |
| Board Type                                      | Туре Н1 - Н2 - Н3                    |





### **Product Content**

Required materials for the considered product are shown in the table below.

| Product components* | Weight (%) | Post-consumer material<br>weight- % | Biogenic material (kg C /<br>declared unit) |
|---------------------|------------|-------------------------------------|---|
| Gypsum              | 80-86      | 0                                   | 0   |
| Paper               | 5-7        | 0                                   | 0.25  |
| Additive            | 5-7        | 0                                   | 0   |
| Sum                 | 100        | 0                                   | 0.25  |

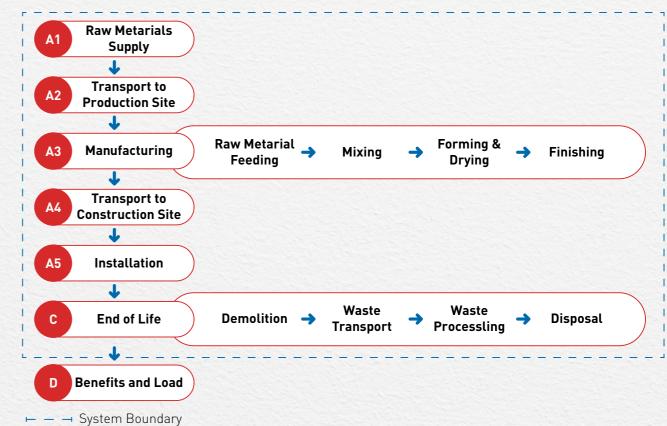
\*Product composition is presented as percentages rather than specific weights to maintain confidentiality while transparently communicating the relative proportions of each component.

### **Packaging Content**

The required packaging materials for the considered product are shown in the table below.

| Product components | Weight - kg | Weight - % (versus the<br>product) | Biogenic material (kg C<br>declared unit) |  |
|--------------------|-------------|------------------------------------|---|--|
| Plastic Strip      | 0.03        | %0.4                               | 0   |  |
| Sum                | 0.03        | %0.4                               | 0   |  |

## System Boundary



### A1 - Raw Material Supply

Production begins with raw materials, primarily sourced locally. The 'Raw Material Supply' phase encompasses raw material extraction and pre-treatment processes before manufacturing. This stage includes the procurement (quarrying) and production of all binder components and additives. Additionally, it considers the consumption of electricity, fuel, and auxiliary materials during production.

### A2 - Raw Material Transport

This stage is relevant for the delivery of raw materials to the production plant. Railway, highway and seaway transportation is also utilized. Transport routes and distances are supplier-specific and provided by the manufacturer. Geographical scope is global.

| Transport Mode             | Туре                                    |
|----------------------------|---|
|                            | Vehicle: Lorry                          |
| Road                       | Size Class: $\rightarrow$ 32 metric ton |
|                            | Emission Standard: EUR05                |
|                            | Fuel Type: Diesel                       |
|                            | Vehicle: Container Ship                 |
| Sea                        | DWT (Load Capacity): 43000 tonne        |
|                            | Fuel Type: Heavy Fuel Oil               |
|                            | Vehicle: Freight Train                  |
| Railway                    | Fuel Type: Diesel                       |
| Stand and the state of the |   |

## System Boundary

### A3 - Manufacturing

The plasterboard production process begins with the extraction and crushing of gypsum, followed by calcination to produce gypsum hemi-hydrate. This hemi-hydrate is then blended with fillers and additives to achieve the desired formulation. A crucial step in manufacturing involves mixing this formulation with water and encasing it between two layers of paper for reinforcement. The assembled boards are then set, cut to size, dried, and subjected to quality inspection before being packaged for distribution. The final products are either packaged or sold in bulk. Electricity and natural gas are used throughout the manufacturing process. Electricity is entirely supplied from the Turkish grid.

### A4 - Product Transport

Product transport from manufacturer to construction site is considered in product material supply stage. The distances and routes are calculated accordingly. Depending on the customer location, product is transported via trucks and other supplies come through seaway.

| Transport Mode | Туре                                    |  |  |  |  |  |
|----------------|---|--|--|--|--|--|
|                | Vehicle: Lorry                          |  |  |  |  |  |
| Deed           | Size Class: $\rightarrow$ 32 metric ton |  |  |  |  |  |
| Road           | Emission Standard: EUR05                |  |  |  |  |  |
|                | Fuel Type: Diesel                       |  |  |  |  |  |
|                | Vehicle: Container Ship                 |  |  |  |  |  |
| Sea            | DWT (Load Capacity): 43000 tonnes       |  |  |  |  |  |
|                | Fuel Type: Heavy Fuel Oil               |  |  |  |  |  |

### A5 - Installation

During the installation of plasterboard, screws, steel profiles, and gypsum serve as the primary materials. These components play a crucial role in securing the plasterboard to ceilings and walls. The process involves fastening the plasterboard onto steel profiles using screws, ensuring a stable and long-lasting structure. Unlike traditional plaster applications, this method emphasizes mechanical fastening, enhancing structural integrity and simplifying installation. By combining screws for attachment, steel profiles for framing, and gypsum boards for finishing, plasterboard offers a versatile and efficient solution for creating smooth, durable interior surfaces.

Additionally, the LCA considers the end-of-life treatment of packaging waste at the installation site. The disposal scenarios for packaging materials are modeled based on EU statistical data. According to the JRC report, around 50% of the packaging plastic is assumed to be recycled and the rest is landfilled.

| Auxilary Materials for Installation | Amount per Functional Unit |
|-------------------------------------|----------------------------|
| Plaster Mortar                      | 10 kg/m²                   |
| Screw                               | 16 pieces                  |
| Galvanized Steel Profile            | 4 meter                    |



### C1 - Deconstruction / Demolition

There is no energy use during uninstallation, manpower and some tools are sufficient.

### C2 - Waste Transport

Waste transport includes the transport of materials after they reach their end-of-life. The average distance was assumed 50 km by truck from demolition site to a waste or recycling area.

| Transport Mode | Туре                                    |
|----------------|---|
|                | Vehicle: Lorry                          |
| Road           | Size Class: $\rightarrow$ 32 metric ton |
| K030           | Emission Standard: EUR05                |
|                | Fuel Type: Diesel                       |

### **C3 - Waste Processing**

The product is assumed to be disposed of in a landfill without reuse, recovery, or recycling. It is classified as nonhazardous waste according to the European list of waste products. Any environmental impacts associated with the treatment of demolished waste are included in this stage. However, as 100% of the material is sent directly to a landfill, no additional treatment is considered necessary.

### C4 - Disposal

All plaster materials ultimately end up in construction and demolition waste landfills. This scenario has been modeled accordingly in the LCA.

### **D** - Benefits

No potential benefits from recycling or reusing the product have been considered. Only the benefits derived from the recycling of packaging materials have been included in the calculations.

**Environmental Product Declaration** 

## **LCA Information**

### **LCA Information**

### **Functional Unit:**

The functional unit is defined as  $1 \text{ m}^2$  of gypsum plasterboard with a thickness of 12.5 mm and a weight of 5.8 kg/m<sup>2</sup>. The conversion factor for transforming from m<sup>2</sup> to kg is 0.172.

### Time Representativeness:

Full year 2023 (01.01.2023 - 31.12.2023)

### Database(s) and LCA Software:

Ecoinvent 3.10 and SimaPro 9.6

### **System Boundaries:**

Cradle to gate with options, modules C1–C4, module D and with optional modules (A4-A5).

|                         | Product Stage       |           |               | Construction<br>Process Stage |                           |     |             |            | End of Life<br>Stage |               |                               |                              | Benefifits<br>and Loads     |           |                  |          |  |
|-------------------------|---------------------|-----------|---------------|-------------------------------|---------------------------|-----|-------------|------------|----------------------|---------------|-------------------------------|------------------------------|-----------------------------|-----------|------------------|----------|--|
|                         | Raw Material Supply | Transport | Manufacturing | Transport                     | Construction Installation | Use | Maintenance | Repair     | Replacement          | Refurbishment | <b>Operational Energy Use</b> | <b>Operational Water Use</b> | Deconstruction / Demolition | Transport | Waste Processing | Disposal | Future reuse, recycling or<br>energy recovery potentials |
| Module                  | A1                  | A2        | A3            | A4                            | A5                        | B1  | B2          | <b>B</b> 3 | B4                   | B5            | B6                            | B7                           | C1                          | C2        | C3               | C4       | D  |
| Modules<br>Declared     | x                   | х         | х             | х                             | х                         | ND  | ND          | ND         | ND                   | ND            | ND                            | ND                           | х                           | х         | х                | х        | х  |
| Geography               | GLO                 | TR        | GLO           |                               |                           |     |             |            | 200                  |               | -                             | 18                           |                             |           |                  |          |  |
| Specific<br>Data Used   |                     | 65%       |               |                               | -                         |     |             |            |                      |               |                               |                              |                             |           |                  |          |  |
| Variation -<br>Products |                     | 0%        |               |                               |                           |     |             |            |                      |               |                               |                              |                             |           |                  |          |  |
| Variation -<br>Sites    |                     | 0%        |               |                               |                           |     |             |            |                      |               | -                             |                              |                             |           |                  |          |  |

### **Geographical Scope**

The geographical scope of this EPD is global.

### Allocation

Source of raw material, water consumption, energy consumption and raw material transportation were weighted according to 2023 production figures. In addition, hazardous and non-hazardous waste amounts were also allocated from the 2023 total waste generation.

### **Cut-Off Criteria**

The cut-off for this EPD based on this PCR is 5% over the product life cycle as described in the relevant PCR. In other words, inputs/outputs that are known or expected to contribute more than 5% to the results of any of the environmental performance indicators are included.

### LCA Modelling, Calculation and Data Quality

The results of the LCA with the indicators as per EPD requirement are given in the LCA result tables. All energy calculations were obtained using Cumulative Energy Demand (LHV) methodology, while freshwater use is calculated with selected inventory flows in SimaPro according to the PCR. There are no co-product allocations within the LCA study underlying this EPD. The regional energy datasets were used for all energy calculations. For LCA modelling and calculation, Ecoinvent database (v3.10, EN15804 Method) and SimaPro (v9.6) LCA software were used. Characterization factors of EF 3.1 are utilized. The impact of infrastructure and capital goods is excluded from the analysis.

### Source of Electricity (Manufacturing)

The electricity data modelled for the production processes is taken from Ecoinvent 3.10 dataset that represents medium voltage electricity production in Türkiye with the reference year, 2021. The chosen dataset has GWP-GHG impact of 0.575 kg CO2 eq. / kWh. The dataset consists of the following production percentages for electricity. Coal, 37%, Hydro, 33%, Natural gas, 17 %, Wind, 8%, Geothermal, 3%, Biogas, 1%, Other, 1%, Biomass,  $\leftarrow$ 1%

### Assumptions

Upstream and downstream road transportation are assumed to be conducted using EUR05 motor vehicles within the 16-32 metric tonne size class, with distances determined via Google Maps. Additionally, a 50 km transport distance is assumed for waste disposal at the C2 stage.

### **Reach Regulation**

No substances included in the Candidate List of Substances of Very High Concern for authorization under the REACH regulations are present in this product either above the threshold for registration with the European Chemicals Agency or above 0.1% (wt/wt).

It is discouraging the use of the results of modules Manufacturing (Module A1-A3) without considering the results of end-of-life module. 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.

### Mandatory impact category indicators according to EN 15804

### Results per functional or declared unit

| Indicator                      | Unit  | A1-A3     | A4       | A5       | C1       | C2       | C3       | C4       | D        |  |
|--------------------------------|---|-----------|----------|----------|----------|----------|----------|----------|----------|--|
| GWP-fossil                     | kg CO <sub>2</sub> eq.  | 1.70E+00  | 5.44E-01 | 2.62E+00 | 0.00E+00 | 1.12E-01 | 0.00E+00 | 6.02E-02 | -9.59E-0 |  |
| GWP-biogenic                   | kg CO <sub>2</sub> eq.  | -1.34E-01 | 9.60E-05 | 5.67E-02 | 0.00E+00 | 2.01E-05 | 0.00E+00 | 1.37E-01 | 6.25E-05 |  |
| GWP- luluc                     | kg CO <sub>2</sub> eq.  | 3.26E-02  | 2.20E-04 | 1.34E-03 | 0.00E+00 | 3.67E-05 | 0.00E+00 | 3.10E-05 | -5.81E-0 |  |
| GWP-total                      | kg CO <sub>2</sub> eq.  | 1.60E+00  | 5.45E-01 | 2.68E+00 | 0.00E+00 | 1.12E-01 | 0.00E+00 | 1.98E-01 | -9.54E-0 |  |
| ODP                            | kg CFC11 eq.  | 5.12E-08  | 8.02E-09 | 1.19E-08 | 0.00E+00 | 2.23E-09 | 0.00E+00 | 1.74E-09 | -2.31E-1 |  |
| AP                             | mol H⁺ eq.  | 6.26E-03  | 2.35E-03 | 9.28E-03 | 0.00E+00 | 4.44E-04 | 0.00E+00 | 4.26E-04 | -3.47E-0 |  |
| EP-freshwater                  | kg P eq.  | 7.44E-04  | 4.87E-06 | 5.12E-05 | 0.00E+00 | 8.63E-07 | 0.00E+00 | 5.00E-06 | -2.67E-0 |  |
| EP- marine                     | kg N eq.  | 1.85E-03  | 7.20E-04 | 2.34E-03 | 0.00E+00 | 1.66E-04 | 0.00E+00 | 1.62E-04 | -6.57E-0 |  |
| EP-terrestrial                 | mol N eq.   | 1.72E-02  | 7.95E-03 | 2.63E-02 | 0.00E+00 | 1.82E-03 | 0.00E+00 | 1.77E-03 | -7.29E-0 |  |
| POCP                           | kg NMVOC eq.  | 6.12E-03  | 3.06E-03 | 7.76E-03 | 0.00E+00 | 6.76E-04 | 0.00E+00 | 6.35E-04 | -3.92E-0 |  |
| ADP -<br>minerals &<br>metals* | kg Sb eq.   | 7.76E-06  | 1.45E-06 | 6.74E-06 | 0.00E+00 | 3.59E-07 | 0.00E+00 | 9.40E-08 | -5.77E-0 |  |
| ADP-fossil*                    | MJ  | 5.08E+00  | 7.36E-01 | 8.07E+00 | 0.00E+00 | 1.29E-01 | 0.00E+00 | 9.12E-02 | -4.77E-0 |  |
| WDP*                           | m <sup>3</sup>  | 6.54E-01  | 3.96E-02 | 5.60E-01 | 0.00E+00 | 6.46E-03 | 0.00E+00 | 6.45E-02 | -3.17E-0 |  |
| Acronyms                       | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc =<br>Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP =<br>Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching<br>freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment<br>EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-<br>minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources<br>potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption |           |          |          |          |          |          |          |          |  |
| Legend                         | potential; WDP = Water [user] deprivation potential, deprivation-weighted water consumption<br>A1: Raw Material Supply, A2: Transport, A3: Manufacturing, A4: Transportation, C1: Demolition, C2: Waste Transport, C3: Waste<br>Processing, C4: Disposal, D: Future reuse, recycling or energy recovery potentials.   |           |          |          |          |          |          |          |          |  |

### Mandatory impact category indicators according to EN 15804

#### Results per functional or declared unit

| Indicator   | Unit                   | A1-A3    | A4       | A5       | C1       | C2       | C3             | C4             | D           |
|---|------------------------|----------|----------|----------|----------|----------|----------------|----------------|-------------|
| GWP-GHG <sup>1</sup>  | kg CO <sub>2</sub> eq. | 1.74E+00 | 5.46E-01 | 2.68E+00 | 0.00E+00 | 1.12E-01 | 0.00E+00       | 6.04E-02       | -9.64E-03   |
| Additional voluntary indicators e.g. the voluntary indicators from EN 15804 or the global indicators according to ISO 21930:2017. |                        |          |          |          |          |          |                |                |             |
| <sup>1</sup> This indicator acc<br>As such, the indica  |                        |          |          |          |          |          | nd biogenic ca | rbon stored in | the product |

### **Resource use indicators**

| Indicator | Unit   | A1-A3   | A4   | A5   | C1  | C2  | C3   | C4  | D                                 |
|-----------|--|---|--|--|---|---|--|---|-----------------------------------|
| PERE      | MJ   | 1.01E+01  | 1.02E-01   | 3.92E-05   | 0.00E+00  | 2.68E-02  | 0.00E+00   | 4.67E+00  | -7.42E-03                         |
| PERM      | MJ   | 4.66E+00  | 0.00E+00   | 0.00E+00   | 0.00E+00  | 0.00E+00  | 0.00E+00   | -4.66E+00   | 0.00E+00                          |
| PERT      | MJ   | 1.47E+01  | 1.02E-01   | 3.92E-05   | 0.00E+00  | 2.68E-02  | 0.00E+00   | 1.38E-02  | -7.42E-03                         |
| PENRE     | MJ   | 4.09E+00  | 7.36E-01   | 9.84E-01   | 0.00E+00  | 1.29E-01  | 0.00E+00   | 9.12E-02  | -4.77E-02                         |
| PENRM     | MJ   | 9.83E-01  | 0.00E+00   | -9.83E-01  | 0.00E+00  | 0.00E+00  | 0.00E+00   | 0.00E+00  | 0.00E+00                          |
| PENRT     | MJ   | 5.08E+00  | 7.36E-01   | 1.36E-04   | 0.00E+00  | 1.29E-01  | 0.00E+00   | 9.12E-02  | -4.77E-02                         |
| SM        | kg   | 0.00E+00  | 0.00E+00   | 0.00E+00   | 0.00E+00  | 0.00E+00  | 0.00E+00   | 0.00E+00  | 0.00E+00                          |
| RSF       | 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                          |
| NRSF      | 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                          |
| FW        | m <sup>3</sup>   | 3.85E-02  | 1.46E-03   | 3.66E-02   | 0.00E+00  | 2.30E-04  | 0.00E+00   | 1.53E-03  | -3.73E-05                         |
| Acronyms  | Use of renewal<br>PENRE = Use<br>PENRM = Use<br>primary energy | renewable prim<br>ble primary ener<br>of non-renewabl<br>of non-renewab<br>y re-sources; SN<br>ondary fuels; FV | rgy resources<br>e primary ene<br>le primary ene<br>M = Use of sec | used as raw n<br>ergy excluding<br>ergy resources<br>condary mater | naterials; PER<br>non-renewabl<br>s used as raw | T = Total use o<br>e primary ene<br>materials; PE | of renewable p<br>ergy resources<br>NRT = Total us | orimary energy<br>s used as raw r<br>se of non-rene | resources;<br>materials;<br>wable |



### Waste indicators

#### Results per functional or declared unit

| Indicator                       | Unit | A1-A3    | A4       | A5       | C1       | C2       | C3       | C4       | D         |
|---------------------------------|------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Hazardous waste<br>disposed     | kg   | 8.69E-05 | 2.19E-04 | 1.04E-03 | 0.00E+00 | 3.90E-05 | 0.00E+00 | 2.07E-05 | -6.03E-06 |
| Non-hazardous<br>waste disposed | kg   | 5.56E-03 | 6.48E-01 | 1.75E-01 | 0.00E+00 | 7.48E-02 | 0.00E+00 | 9.61E+00 | -5.12E-04 |
| Radioactive waste<br>disposed   | kg   | 2.03E-05 | 1.67E-06 | 1.45E-05 | 0.00E+00 | 5.02E-07 | 0.00E+00 | 2.29E-07 | -1.08E-07 |

### **Output flow indicators**

#### Results per functional or declared unit

| Indicator                        | Unit | A1-A3    | A4       | A5       | 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 |
| Material 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 |
| Materials for<br>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 |
| Exported energy,<br>electricity  | MJ   | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Exported energy,<br>thermal      | MJ   | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

\*Disclaimer: This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator.

Ecoinvent / Ecoinvent Centre, www.ecoinvent.org GPI / General Programme Instructions of the International EPD® System. Version 4.0. GPI / General Programme Instructions of the International EPD® System. Version 5.0. **ISO 14020:2000/** Environmental Labels and Declarations — General principles ISO 14040/44 / DIN EN ISO 14040: 2006-10 / Environmental management - Life cycle assessment - Principles and framework (ISO14040:2006) and Requirements and guidelines (ISO 14044:2006) ISO 14025 / DIN EN ISO 14025:2009-11 / Environmental labels and declarations - Type III environmental declarations - Principles and procedures PCR / EN 15804 serves as the core Product Category Rules (PCR), PCR 2019:14 Construction products, version 1.3.4 The International EPD® System / The International EPD® System is a programme for type III environmental declarations, maintaining a system to verify and register EPD®s as well as keeping a library of EPD®s and PCRs in accordance with ISO 14025. www.environdec.com

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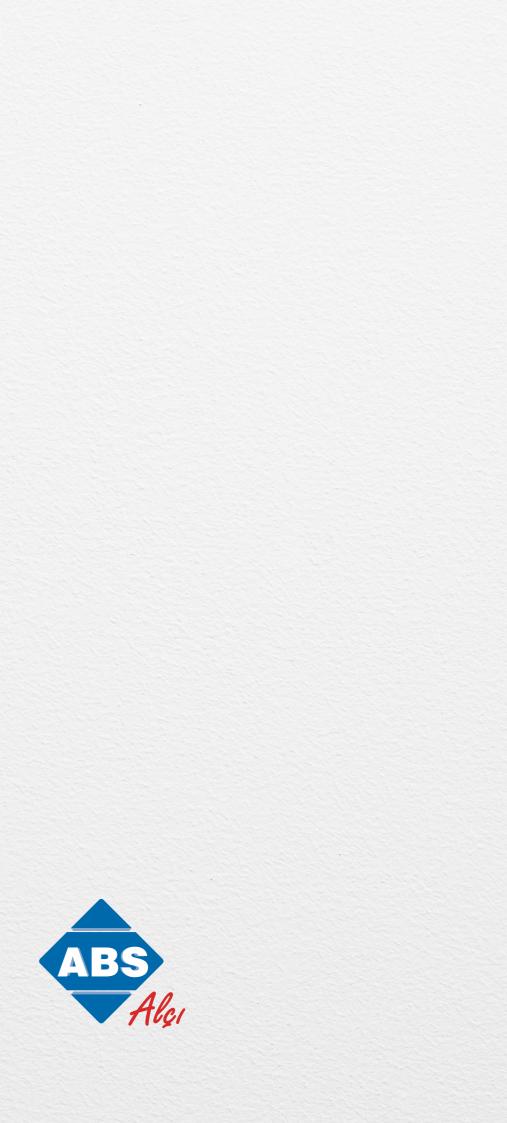
SimaPro / SimaPro LCA Software, Pré Consultants, the Netherlands, www.pre-sustainability.com

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