

# ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025:2006 and  
EN 15804:2012+A2:2019 for:

## Rimano TEN

**Version: 02**

**Date of publication: 2024/03/01**

**Validity: 5 years**

**Valid until: 2029/03/01**

**Scope of the EPD®: Romania**



THE INTERNATIONAL EPD® SYSTEM

The International EPD®

Programme operator: EPD international AB

System Registration number:

S-P: 12746



**Romania production plant:**

Saint-Gobain Construction Products, RIGIPS, Turda  
22 Decembrie 1989 Street, Nr 3, 401113, Cluj  
county

# General information

## Company & EPD information

**Manufacturer:** Saint-Gobain Construction Products Romania, RIGIPS

Saint-Gobain designs, manufactures and distributes materials and services for the construction and industrial markets.

Its integrated solutions for the renovation of public and private buildings, light construction and the decarbonization of construction and industry are developed through a continuous innovation process and provide sustainability and performance.

Saint-Gobain's Gypsum solutions are represented by 4 brands: Gyproc®, Placo®, Rigips® and British Gypsum®. With over 13 800 employees, we provide plaster and plasterboard solutions in 39 countries, through 100 sites.

At RIGIPS plaster Turda plant, we produce plaster for construction and modeling, plasters and undercoats that can be applied manually or mechanically, adhesive and joint fillers for bonding plasterboard; all products are made from natural gypsum extracted from the local quarry (Cheia Quarry, Cluj county).

**Production plant:** Romania, Turda

**Management system-related certification:** ISO 9001, ISO 14001, ISO 45001, ISO 50001

**Programme used:** The International EPD® System

**PCR identification:** EN 15804:2012+A2:2019 Sustainability of construction works – Environmental product declaration - core rules for the product category of construction product and The International EPD® System PCR 2019:14 version 1.3.2 for Construction products and Construction services

**Prepared by:** IVL Swedish Environmental Research Institute, EPD International Secretariat

**UN CPC CODE:** 37530 Articles of plaster or of composition based on plaster

**Owner of the declaration:** Saint-Gobain Construction Products Romania Rigips Business Unit

**Product name and manufacturer represented:** Gypsum Plaster – Rimano TEN

**EPD® prepared by:** Ana-Maria Dumitru (Saint-Gobain România) and Yves Coquelet (Saint-Gobain LCA central team)

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**Geographical scope of the EPD®:** România

**EPD® registration number:** S-P- 12746

**Declaration issued:** 1<sup>st</sup> March 2024 valid until: 1<sup>st</sup> March 2029

**Demonstration of verification:** an independent verification of the declaration was made, according to ISO 14025:2010. This verification was external and conducted by the third-party verifier mentioned below based on the PCR mentioned above.

## Programme information

**PROGRAMME:** The International EPD® System

**ADRESS:** EPD International AB - Box 210 60 - SE-100 31 Stockholm - Sweden

**WEBSITE:** [www.environdec.com](http://www.environdec.com)

**E-MAIL:** [info@environdec.com](mailto:info@environdec.com)

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 1.3.2

**PCR review was conducted by:** The Technical Committee of the International EPD® System  
See [www.environdec.com](http://www.environdec.com) for a list of members.

**President:** Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat [www.environdec.com/contact](http://www.environdec.com/contact) - Contact via [info@environdec.com](mailto:info@environdec.com)

**Independent third-party verification of the declaration and data, according to ISO 14025:2006:**

☐ EPD process certification      ☒ EPD verification

**Third party verifier:**

Dr Andrew Norton, Director of Renuables Ltd LCA. Materials. Energy

Tlf +44 (0)7900 560402 – email: [a.norton@renuables.co.uk](mailto:a.norton@renuables.co.uk)

Approved by: The International EPD® System

**Procedure for follow-up of data during EPD validity involves third part verifier:** ☒ Yes    ☐ No

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

EPDs within the same product category but registered in different EPD programmes, or not compliant with EN 15804, may not be comparable. For two EPDs to be comparable, they must be based on the same PCR (including the same version number) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison. For further information about comparability, see EN 15804 and ISO 14025.

## Product information

### Product description and description of use

This Environmental Product Declaration (EPD®) describes the environmental impacts of 7.5kg/m<sup>2</sup> of installed plaster 10 mm with a useful life of 50 years.

Saint-Gobain plater products create comfort inside buildings not only through the aesthetic side – smooth walls and ceilings, but also through a healthier environment for people, plaster regulating the humidity in the rooms; when the atmosphere is too humid, the plaster absorbs excess moisture, and when the atmosphere is too dry, the plaster gives off moisture.

Rimano® TEN is a lightweight gypsum undercoat for interior plastering, with heat insulating properties, for manual application. Intended use:

- ☐ It can be used for the interior plastering by hand of the brick, ACC, concrete walls, etc.
- ☐ It can be applied in layers from 5 mm up to 40 mm thickness.
- ☐ It can be used also for renovation and repair works, where the plastering must be reconditioned.
- ☐ It is recommended as a replacement of traditional plastering (grout, primer, first layer of levelling plaster).

More data you can find following link: <https://www.rigips.ro/produse/rimano-ten-aplicare-manuala/rimano-ten>

### Technical data/physical characteristics:

- The product parameters presented below refer to temperature requirements of 23±2°C and relative air humidity of 50±5%.

|                      |                                 |
|----------------------|---------------------------------|
| Reaction to fire     | A1 (SR EN 13279-1:2009)         |
| Thermal conductivity | ≈ 0.23 W/m K (SR EN 12664:2009) |

### Declaration of the main product components and/or materials

All raw materials contributing more than 5% to any environmental impact are listed in the following table.

| Product components           | Weight (%)  | Post-consumer material weight (%) | Biogenic material weight in kg C/kg |
|------------------------------|-------------|-----------------------------------|-------------------------------------|
| Gypsum (Natural)             | 85 – 95 %   |                                   |                                     |
| Additives & aggregates       | 15 – 5 %    |                                   |                                     |
| <b>Sum</b>                   | <b>100%</b> |                                   |                                     |
| Packaging materials          | Weight (%)  | Weight (%) - versus the product   | Biogenic material weight in kg C/kg |
| Cardboard                    | 0.035       |                                   | -4.78E-03                           |
| Glue                         | 0.734       |                                   |                                     |
| Ink                          | 0.012       |                                   |                                     |
| Paper label                  | 0.0002      |                                   | -2.30E-05                           |
| Polyethylene (bag & stretch) | 0.455       |                                   |                                     |
| Wooden pallet                | 2.2         |                                   | -1.53E-02                           |

The product does not contain any hazardous substance listed in the “Candidate List of Substances of Very High Concern (SVHC) for authorization” and “Persistent Bio- accumulative and Toxic (PBT & vPvB)” in a percentage higher than 0.1% by unit weight. The verifier and the PROGRAMME operator do not make any claim nor have any responsibility of the legality of the product.

## LCA calculation information

|                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>TYPE OF EPD</b>                           | Cradle to grave and module D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>FUNCTIONAL UNIT</b>                       | 7.5kg/m <sup>2</sup> of plaster per 10mm thickness and an expected average service life of 50 years                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>SYSTEM BOUNDARIES</b>                     | Cradle to grave + Module D = A + B + C +D                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>REFERENCE SERVICE LIFE (RSL)</b>          | The Reference Service Life (RSL) of the Gypsum product is 50 years. This value of 50 years is the expected lifespan of the product without refurbishment and corresponds to the standard building design life.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>CUT-OFF RULES</b>                         | <p>In the case that there is not enough information, the process energy and materials representing less than 1% of the whole energy and mass used can be excluded (if they do not cause significant impacts). The addition of all the inputs and outputs excluded cannot be bigger than 5% of the whole mass and energy used, as well as of the emissions to environment.</p> <p>Flows related to human activities such as employee transport are excluded.</p> <p>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> |
| <b>ALLOCATIONS</b>                           | <p>Allocation criteria are based on mass.</p> <p>The polluter pays principle as well as the modularity principle have been followed.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>GEOGRAPHICAL COVERAGE AND TIME PERIOD</b> | <p>Scope: Romania</p> <p>Data is representative of one production site Saint-Gobain Construction Products RIGIPS located in Turda, Cluj county, Romania</p> <p>Data is representative of the year 2022</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>BACKGROUND DATA SOURCE</b>                | Databases GaBi 2022 and ecoinvent v.3.8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>SOFTWARE</b>                              | GaBi 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

According to EN 15804:2012+A2:2019, EPDs of construction products may not be comparable if they do not comply with this standard. According to ISO 21930: 2017 EPDs might not be comparable if they are from different programmes.

## 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                | X        | X                                             |
| Geography          | RO                   | RO        | RO            | RO                 | RO                                | -         | -           | -      | -           | -             | -                      | -                     | RO                         | RO        | RO               | RO       | -                                             |
| Specific data used | >80% GWP- GHG        |           |               |                    |                                   |           |             |        |             |               |                        |                       |                            |           |                  |          |                                               |
| Variation products | One site one product |           |               |                    |                                   |           |             |        |             |               |                        |                       |                            |           |                  |          |                                               |
| Variation sites    | One site production  |           |               |                    |                                   |           |             |        |             |               |                        |                       |                            |           |                  |          |                                               |

## Life cycle stages



## A1-A3, Product stage

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

### A1, Raw materials supply

This module includes the extraction and transformation of raw materials and packaging.

### A2, Transport to the manufacturer

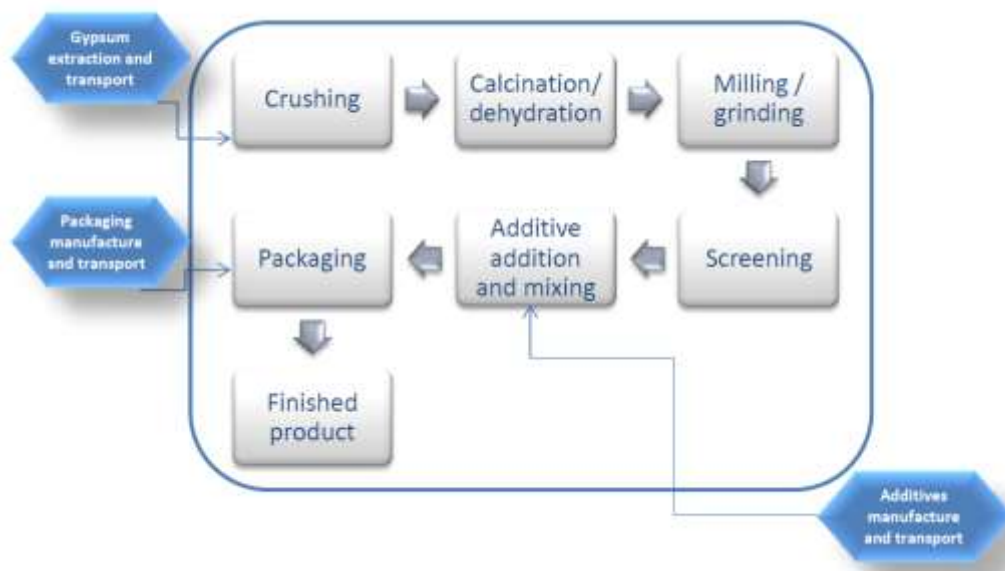
This module includes the transportation of raw materials and packaging to the manufacturing site. The modelling includes road, boat and/or train transportations.

### A3, Manufacturing

This module includes the manufacturing of products. The processing of any waste arising from this stage is also included.

## Manufacturing process flow diagram

System diagram:



### Manufacturing in detail:

Gypsum rock is open pit quarried by drilling and blasting, then transported to a crushing plant where it is crushed, screened and stockpiled according to its quality. The stockpiled ore transported by trucks to manufacturing factory is first crushed to reduce rocks size and further dehydrated in calcining kilns to produce hemihydrate (stucco). Stucco is further ground to obtain a specific surface area and then screened to remove any particles that are too large. In the manufacture of plasters, stucco is batch mixed with additives and aggregates to produce finished product. The thoroughly mixed plaster is fed to a bagging operation.

Gypsum waste is reintegrated back into the manufacturing process wherever possible.

## 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 in the building.

### A4, Transport to the building site

This module includes the transport from the manufacturing site to the building site. Transport is calculated based on a scenario with the parameters described in the following table.

| PARAMETER                                                                                                           | VALUE                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| <b>Fuel type and consumption of vehicle or vehicle type used for transport e.g. long distance truck, boat, etc.</b> | Freight truck, maximum load weight of 27.9 t, real load of 24 t and consumption of 0.38 liters per km |
| <b>Distance</b>                                                                                                     | 343 km                                                                                                |
| <b>Capacity utilisation (including empty returns)</b>                                                               | 66% (30% empty returns)                                                                               |
| <b>Bulk density of transported products*</b>                                                                        | 1036.14kg/m <sup>3</sup>                                                                              |
| <b>Volume capacity utilisation factor</b>                                                                           | 1                                                                                                     |

### A5, Installation in the building

This module includes the installation materials and the management and processing of waste generated during the installation. The parameters are presented in the following table.

| PARAMETER                                                                                                                                                                               | VALUE/DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Ancillary materials for installation (specified by materials)</b>                                                                                                                    | None                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Water consumption</b>                                                                                                                                                                | 5.4 liters/m <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                            |
| <b>Other resource use</b>                                                                                                                                                               | None                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Quantitative description of energy type (regional mix) and consumption during the installation process</b>                                                                           | 0.001MJ/kg                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)</b>                                                   | Plaster: 0,05 kg<br>Cardboard 3.45E-04 kg<br>Paper label 1.57E-06 kg<br>Polyethylene (bag & stretch) 4.55E-03 kg<br>Wooden pallet 2.2E-02 kg                                                                                                                                                                                                                                         |
| <b>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)</b> | <b>Materials to landfill:</b><br>Plaster to landfill: 0,05 kg<br>Cardboard 6.348E-05 kg<br>Paper label E-07 kg<br>Polyethylene (bag & stretch) 2.707E-03 kg<br>Wooden pallet 2.002E-03 kg<br><b>Materials to recycling, energy recovery, reuse:</b><br>Cardboard 2.8152E-04 kg<br>Paper label 1.28E-06 kg<br>Polyethylene (bag & stretch) 1.842E-03 kg<br>Wooden pallet 1.999E-02 kg |
| <b>Direct emissions to ambient air, soil, and water</b>                                                                                                                                 | water vapours 0.534l/kg                                                                                                                                                                                                                                                                                                                                                              |

## 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:

The product has a reference service life of 50 years. It is assumed that the product will last in situ with no requirements for maintenance, repair, replacement, or refurbishment throughout this period. Therefore, it has no impact at this stage.

## C1-C4, End of Life Stage

**Description of the stage:** This stage includes the following modules:

- C1, Deconstruction, demolition: The de-construction and/or dismantling of the product take part of the demolition of the entire building. For the studied product, a small amount of energy is considered 0.05 MJ/m<sup>2</sup>.
- C2, Transport to waste processing
- C3, Waste processing for reuse, recovery and/or recycling
- C4, Disposal, including provision and all transport, provision of all materials, products and related energy and water use

### Description of the scenarios and additional technical information for the end of life:

| PARAMETER                                                         | VALUE/DESCRIPTION                                                                                                                                                                         |
|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Collection process specified by type</b>                       | 100% collected with mixed deconstruction and demolition waste (including board, screws and jointing tape/compound)<br><b>Materials to recycling, energy recovery, reuse:</b>              |
| <b>Recovery system specified by type</b>                          | Cardboard 2.8152E-04 kg<br>Paper label 1.28E-06 kg<br>Polyethylene (bag & stretch) 1.842E-03 kg<br>Wooden pallet 1.999E-02 kg                                                             |
| <b>Disposal specified by type</b>                                 | <b>Materials to landfill:</b><br>Plaster to landfill: 0,05 kg<br>Cardboard 6.348E-05 kg<br>Paper label E-07 kg<br>Polyethylene (bag & stretch) 2.707E-03 kg<br>Wooden pallet 2.002E-03 kg |
| <b>Assumptions for scenario development (e.g. transportation)</b> | Gypsum waste is transported 50 km by truck from deconstruction/demolition sites to landfill                                                                                               |

## D, Reuse/recovery/recycling potential

There is no reuse nor recovery nor recycling of the product. Hence, no recycling benefits are reported in module D.

## LCA results

As specified in EN 15804:2012+A2:2019 and the Product-Category Rules, the environmental impacts are declared and reported using the baseline characterization factors from the ILCD. Specific data has been supplied by the plant, and generic data come from GaBi and ecoinvent databases.

All emissions to air, water, and soil, and all materials and energy used have been included.

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

All figures refer to a declared unit of 7.5kg/m<sup>2</sup> of powder plaster to have 10mm thickness installed and a useful life of 50 years.

The following results corresponds to a single product manufactured in a single plant:

## 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 CO2 eq.]                                 | 1.43E+00      | 1.83E-01           | 3.11E+00        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 3.11E-02                       | 2.98E-02     | 0                   | 5.64E-02    | -2.16E-01                    |
|                                                                                     | Climate Change (fossil) [kg CO2 eq.]                        | 1.46E+00      | 1.80E-01           | 3.39E-01        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 3.11E-02                       | 2.92E-02     | 0                   | 5.19E-02    | -2.17E-01                    |
|                                                                                     | Climate Change (biogenic) [kg CO2 eq.]                      | -4.53E-02     | 2.31E-03           | 2.77E+00        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 4.21E-05                       | 3.76E-04     | 0                   | 4.46E-03    | 7.04E-04                     |
|                                                                                     | Climate Change (land use change) [kg CO2 eq.]               | 1.29E-02      | 1.01E-03           | 5.76E-04        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 3.28E-06                       | 1.64E-04     | 0                   | 5.00E-05    | -1.79E-04                    |
|    | Ozone depletion [kg CFC-11 eq.]                             | 6.17E-08      | 1.09E-14           | 5.24E-09        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 6.64E-09                       | 1.77E-15     | 0                   | 2.10E-08    | -1.17E-08                    |
|    | Acidification terrestrial and freshwater [Mole of H+ eq.]   | 5.05E-03      | 2.20E-04           | 7.18E-04        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 3.23E-04                       | 3.63E-05     | 0                   | 4.88E-04    | -8.58E-04                    |
|    | Eutrophication freshwater [kg P eq.]                        | 1.28E-03      | 1.66E-06           | 9.46E-05        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 2.95E-06                       | 2.70E-07     | 0                   | 1.46E-05    | -1.54E-04                    |
|                                                                                     | Eutrophication marine [kg N eq.]                            | 4.18E-04      | 5.42E-07           | 3.08E-05        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 9.62E-07                       | 8.80E-08     | 0                   | 4.76E-06    | -5.01E-05                    |
|                                                                                     | Eutrophication terrestrial [Mole of N eq.]                  | 1.16E-03      | 7.89E-05           | 3.63E-04        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 1.43E-04                       | 1.31E-05     | 0                   | 1.70E-04    | -1.42E-04                    |
|  | Photochemical ozone formation - human health [kg NMVOC eq.] | 1.11E-02      | 9.21E-04           | 2.66E-03        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 1.57E-03                       | 1.53E-04     | 0                   | 1.86E-03    | -1.50E-03                    |
|  | Resource use, mineral and metals [kg Sb eq.] <sup>1</sup>   | 4.21E-03      | 1.94E-04           | 9.12E-04        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 4.31E-04                       | 3.21E-05     | 0                   | 5.41E-04    | -6.76E-04                    |
|                                                                                     | Resource use, energy carriers [MJ] <sup>1</sup>             | 5.41E-06      | 1.52E-08           | 3.31E-07        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 1.60E-08                       | 2.47E-09     | 0                   | 1.19E-07    | -6.14E-07                    |
|  | Water deprivation potential [m³ world equiv.] <sup>1</sup>  | 3.49E+01      | 2.43E+00           | 2.31E+00        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 4.24E-01                       | 3.94E-01     | 0                   | 1.46E+00    | -5.73E+00                    |

<sup>1</sup> 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 (PERE) [MJ]                               | 5.43E+00      | 1.38E-01           | 2.24E-01        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 2.40E-03                       | 2.24E-02     | 0                   | 1.26E-02    | -7.64E-02                    |
|  Primary energy resources used as raw materials (PERM) [MJ]                | 1.89E+01      | 0                  | -1.63E+00       | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 0                              | 0            | 0                   | 0           | 0                            |
|  Total use of renewable primary energy resources (PERT) [MJ]               | 2.43E+01      | 1.38E-01           | -1.41E+00       | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 2.40E-03                       | 2.24E-02     | 0                   | 1.26E-02    | -7.64E-02                    |
|  Use of non-renewable primary energy (PENRE) [MJ]                          | 3.49E+01      | 2.43E+00           | 2.31E+00        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 4.24E-01                       | 3.95E-01     | 0                   | 1.46E+00    | -5.73E+00                    |
|  Non-renewable primary energy resources used as raw materials (PENRM) [MJ] | 1.10E+01      | 0                  | -4.15E+00       | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 0                              | 0            | 0                   | 0           | 0                            |
|  Total use of non-renewable primary energy resources (PENRT) [MJ]        | 4.59E+01      | 2.43E+00           | -1.84E+00       | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 4.24E-01                       | 3.95E-01     | 0                   | 1.46E+00    | -5.73E+00                    |
|  Input of secondary material (SM) [kg]                                   | 1.94E-02      | 0                  | 7.32E-04        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 0                              | 0            | 0                   | 0           | 0                            |
|  Use of renewable secondary fuels (RSF) [MJ]                             | 1.677E-24     | 0                  | 6.329E-26       | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 0                              | 0            | 0                   | 0           | 0                            |
|  Use of non-renewable secondary fuels (NRSF) [MJ]                        | 1.97E-23      | 0                  | 7.434E-25       | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 0                              | 0            | 0                   | 0           | 0                            |
|  Use of net fresh water (FW) [m3]                                        | 2.90E-02      | 1.56E-04           | 1.15E-02        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 2.43E-05                       | 2.53E-05     | 0                   | 1.56E-03    | -2.09E-03                    |

## 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]       | 1.25E-05      | 1.16E-11           | 9.91E-07        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 1.17E-06                       | 1.89E-12     | 0                   | 2.19E-06    | -1.422E-06                   |
|  Non-hazardous waste disposed (NHWD) [kg]  | 2.88E-01      | 3.48E-04           | 8.37E-01        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 2.44E-03                       | 5.66E-05     | 0                   | 9.87E+00    | -6.55E-02                    |
|  Radioactive waste disposed (RWD) [kg]     | 3.97E-04      | 2.99E-06           | 7.65E-06        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 2.94E-06                       | 4.87E-07     | 0                   | 9.51E-06    | -6.33E-06                    |
|  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]       | 1.28E-02      | 0                  | 2.01E-01        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 0                              | 0            | 0                   | 0           | 0                            |
|  Material for Energy Recovery (MER) [kg] | 0             | 0                  | 0               | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 0                              | 0            | 0                   | 0           | 0                            |
|  Exported electrical energy (EEE) [MJ]   | 0             | 0                  | 3.66E-01        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 0                              | 0            | 0                   | 0           | 0                            |
|  Exported thermal energy (EET) [MJ]      | 0             | 0                  | 6.52E-01        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 0                              | 0            | 0                   | 0           | 0                            |

## Additional voluntary indicator (GWP total without biogenic CO<sub>2</sub>)

|                                                                                   |                                                      | 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 <sub>2</sub> eq.] <sup>2</sup> | 1.48E+00      | 1.81E-01           | 1.20E+00        | 0      | 0              | 0         | 0              | 0                | 0                         | 0                        | 3.11E-02                       | 2.95E-02     | 0                   | 5.21E-02    | 7.04E-04                     |

<sup>2</sup> 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.

## Information on biogenic carbon content

|                                                                                   |                                           | PRODUCT STAGE |
|-----------------------------------------------------------------------------------|-------------------------------------------|---------------|
| Biogenic Carbon Content                                                           |                                           | A1 / A2 / A3  |
|  | Biogenic carbon content in product [kg]   | 1.14E-02      |
|  | Biogenic carbon content in packaging [kg] | 5.92E-01      |

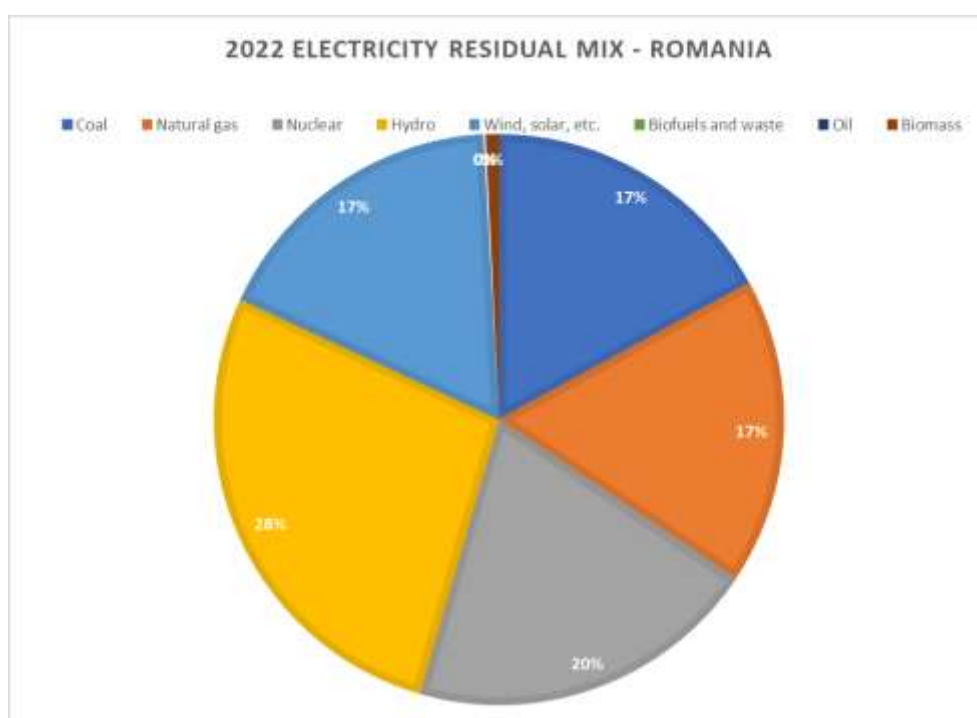
*Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>.*

The product contains biogenic carbon due to packaging, paper, cardboard and wooden pallets production.

## Additional information:

### Electricity information

| TYPE OF INFORMATION                                   | DESCRIPTION                                                                       |
|-------------------------------------------------------|-----------------------------------------------------------------------------------|
| Location                                              | Representative of Electricity purchased by Saint-Gobain in Romania                |
| Geographical representativeness                       | Share of energy sources                                                           |
|                                                       | Coal 17.05%                                                                       |
|                                                       | Natural gas 17.36%                                                                |
|                                                       | Nuclear 20.09%                                                                    |
|                                                       | Hydro 27.40%                                                                      |
|                                                       | Wind, solar, etc. 17.20%                                                          |
|                                                       | Biofuels and waste 0.06%                                                          |
|                                                       | Oil 0.08%                                                                         |
|                                                       | Biomass 0.75%                                                                     |
| Reference year                                        | 2022                                                                              |
| Type of dataset                                       | Cradle to gate from Gabi and ecoinvent databases                                  |
| Source                                                | European Residual Mixes 2022 Association of Issuing Bodies                        |
| CO <sub>2</sub> emission kg CO <sub>2</sub> eq. / kWh | 270.77 kg of CO <sub>2</sub> eq/kWh<br>Based on Climate Change - fossil indicator |



### 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 Construction Products RIGIPS

Turda, Romania. After evaluating the inventory, according to the defined ranking in the LCA report, the assessment reflects 100% inventory data quality.

## Environmental impacts according to EN 15804:2012 + A1

The following tables presents results of 8kg/m<sup>2</sup> of plaster installed on 10mm thickness with a useful life of 50 years according to EN 15804:2012 +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 <sub>2</sub> eq.]                         | 1.41E+00      | 1.77E-01           | 8.49E-01        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 3.07E-02                       | 2.88E-02     | 0                   | 5.07E-02    | -2.05E-01                    |
| Ozone depletion (ODP) [kg CFC 11eq.]                                            | 5.10E-08      | 1.15E-17           | 4.26E-09        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 5.26E-09                       | 1.86E-18     | 0                   | 1.66E-08    | -9.96E-09                    |
| Acidification potential (AP) [kg SO <sub>2</sub> eq.]                           | 4.25E-03      | 1.60E-04           | 5.37E-04        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 2.30E-04                       | 2.63E-05     | 0                   | 3.71E-04    | -7.37E-04                    |
| Eutrophication potential (EP) [kg (PO <sub>4</sub> ) <sub>3</sub> -eq.]         | 6.66E-04      | 3.75E-05           | 4.44E-04        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 5.75E-05                       | 6.19E-06     | 0                   | 8.77E-05    | -7.29E-05                    |
| Photochemical ozone creation (POCP) - [kg Ethylene eq.]                         | 5.46E-04      | 1.73E-05           | 2.12E-04        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 2.22E-05                       | 2.81E-06     | 0                   | 3.39E-05    | -9.06E-05                    |
| Abiotic depletion potential for non-fossil resources (ADP-elements) [kg Sb eq.] | 2.97E-04      | 1.68E-08           | 1.14E-05        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 1.57E-08                       | 2.73E-09     | 0                   | 1.17E-07    | -6.05E-07                    |
| Abiotic depletion potential for fossil resources (ADP-fossil fuels) [MJ]        | 2.98E+01      | 2.42E+00           | 2.11E+00        | 0         | 0              | 0         | 0              | 0                | 0                         | 0                        | 4.22E-01                       | 3.94E-01     | 0                   | 1.44E+00    | -5.36E+00                    |

## References

1. ISO 14040:2006 Environmental Management-Life Cycle Assessment-Principles and framework.
2. ISO 14044:2006 Environmental Management-Life Cycle Assessment-Requirements and guidelines.
3. ISO 21930:2017 Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services.
4. ISO 14025:2006 Environmental labels and Declarations-Type III Environmental Declarations-Principles and procedures.
5. EN 15804:2019+A2 - Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products
6. EPD International. General Program Instructions (GPI) for the International EPD® System (version 4.0) [www.environdec.com](http://www.environdec.com).
7. The International EPD System PCR 2019:14 Construction products and Construction services. Version 1.3.2
8. European Chemical Agency, Candidate List of substances of very high concern for Authorization.  
[http://echa.europa.eu/chem\\_data/authorisation\\_process/candidate\\_list\\_table\\_en.as](http://echa.europa.eu/chem_data/authorisation_process/candidate_list_table_en.as)
9. LCA report name: 2023\_07\_06\_LCA\_REPORT\_Rigips