

# CIMENTO®

## ENVIRONMENTAL PRODUCT DECLARATION

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

## CIMENTO® PANELS



**Programme:** The International EPD® System, [www.environdec.com](http://www.environdec.com)

**Programme operator:** EPD International AB

**EPD registration number:** EPD-IES-0017893:001

**Publication date:** 2025-03-18

**Valid until:** 2030-03-17

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to the continued registration and publication at [www.environdec.com](http://www.environdec.com)

 **EPD**®  
THE INTERNATIONAL EPD® SYSTEM



CIMENTO® is a brand of **SAI**  
industry

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## GENERAL INFORMATION

An Environmental Product Declaration (EPD) is a standardized way of quantifying the potential environmental impacts of a product or system. EPDs are produced according to a consistent set of rules – Product Category Rules (PCR) – that define the requirements within a given product category. These rules are a key part of ISO 14025 as they enable transparency and comparability between EPDs. This EPD is a “cradle to gate” (A1-A3) with modules C1-C4, module D and optional modules (A4-A5) declaration covering production and end-of-life life cycle stages. Sai Industry S.r.l., as the EPD owner, has the sole ownership, liability, and responsibility for the EPD.

CEN standard EN 15804 serves as the Core Product Category Rules (PCR).

Product Category Rules (PCR): 2019:14, version 1.3.4.

PCR review was conducted by: The Technical Committee of the International EPD® System. See [www.environdec.com](http://www.environdec.com) for a full list of members. Review chair: No chair appointed. The review panel may be contacted via [info@environdec.com](mailto:info@environdec.com).

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;
- be valid at the time of comparison.

EPDs of construction products may not be comparable if they do not comply with EN 15804.

### Declaration Owner

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### Independent third-party verifier:

According to ISO 14025:2010, via:  
SGS ICS Italia S.p.A.  
is an approved certification body accountable for the third-party verification  
The certification body is accredited by: ACCREDIA, certificate n.0005VV.

### EPD Registration Number:

EPD-IES-0017893:001

### CPC CODE:

3754

Procedure for follow-up of data during EPD validity doesn't involve third party verifier

## OUR STORY

**CIMENTO®** is a brand of Sai industry srl

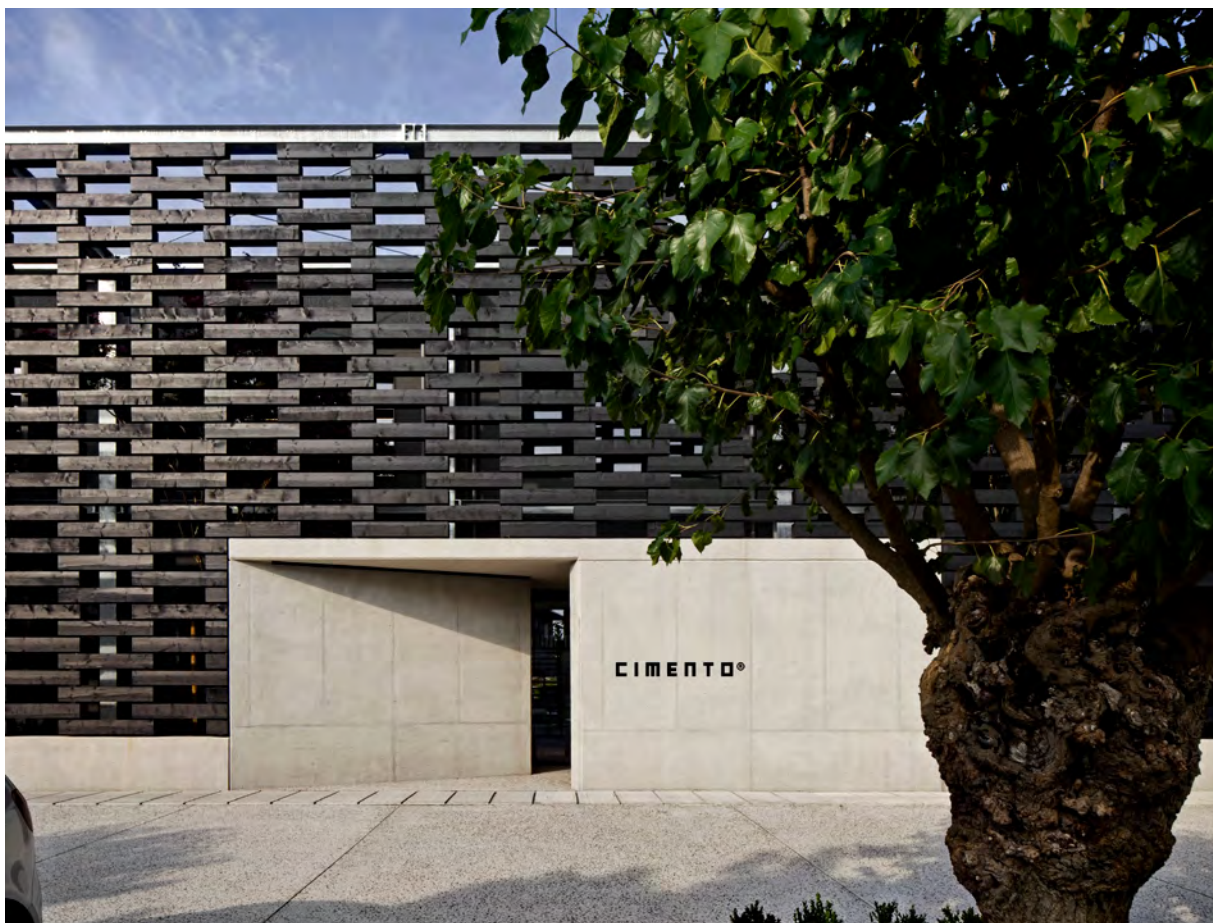
The company's registered and operational headquarters is located in the province of Venice (Via J.F. Kennedy 107/A, 30027, San Donà di Piave), a city that is a symbol of important architectural projects and historically the site of major exhibitions in the furniture industry itself. The desire to realise the ideas of internationally renowned architects and artists, drove the company to create an entrepreneurial reality, which has grown thanks to its ability to take on ever-new challenges. Unique, out-of-the-ordinary ideas and projects are realised to meet the different needs of each customer.

**CIMENTO®** is a brand dedicated to the design and development of surfaces and contracting services for the retail, furnishing, catering industry, office, and hotels sectors. **CIMENTO®** is a leading brand specializing in innovative cement-based surfaces for architecture and design. Combining tradition with cutting-edge technology, **CIMENTO®** products offer aesthetic, lightweight and versatile cladding solutions, making them ideal for both interior and

exterior applications. With a strong focus on sustainability, **CIMENTO®** collaborates with architects, designers, and industry professionals to create unique, high-quality spaces. Its patented technology ensures durability, easy installation, and a refined aesthetic, making it a preferred choice for contemporary design projects worldwide.

Materials, technologies, design are the factors that determine the success of a layout studied down to the smallest detail. Modern spaces must respond not only to multiple aesthetic canons but also to criteria of functionality and enhancement of products and services. The company, being fully aware of the continuous evolution of the market, is constantly searching for innovative solutions both in terms of materials and in terms of the use/arrangement of spaces. The focus is always on creating functional and harmonious environments, where the user feels welcome and the product is the protagonist. Since its launch, the brand has operated both in Italy and abroad, gaining an important presence in both Europe and the Middle East.

Figure 1 - Registered and operational headquarter



## OUR PRODUCTS

Currently, the **CIMENTO®** products' range consists of surface cladding solutions and a sculptural furniture collection. Specifically, the **CIMENTO®** compound is used for:

- **CIMENTO® FORMELLE:** decorative tiles made in **CIMENTO®**;
- **CIMENTO® PANELS:** wooden panels combined with the **CIMENTO®** finishes;
- **CIMENTO® WILL:** cladding slabs for the covering of existing structures and volumes, both flat and curved;

## CERTIFICATIONS

The company has been certified to ISO 9001 quality standard since 2020 with the certification scope: "Design and production of interiors, exteriors and for furniture components branded **CIMENTO®**" with the Certification Body TÜV NORD CERT GmbH (Certificate Registration No. 44 100 20410013).

Furthermore, the company has also been certified to ISO 14001 environmental standard with the certification scope: "Design and production of indoor and outdoor furniture elements coated with cement-based mixture through the stages of cutting, edging, gluing and planing wood, mixing, laying and curing the cement-based coating, applying protective surface treatment and finishing." with the Certification Body SGS ICS ITALIA S.r.l. (Certificate Registration No. IT25/00000088).

Figure 2 - Representation of the **CIMENTO® PANELS**



## PRODUCT INFORMATION

Specifically, the product that is the subject of this study is **CIMENTO® PANELS**, a product in the **CIMENTO®** range, designed for indoor use and is used to create counter walls and suspended ceilings. **CIMENTO® PANELS** applies the typical finish of **CIMENTO®** products to different substrates, depending on the customer's requirements. The standard substrate for this product is the MDF panel, which is also the panel chosen as the substrate for this study.

**CIMENTO® PANELS** is a non-combustible product. **CIMENTO® PANELS** are to be considered as decorative elements without any structural function. Therefore, these panels are not suitable for applications subject to mechanical and chemical stress, such as kitchen worktops, bathrooms and wet rooms.

Table 1: Characteristics of **CIMENTO® PANELS**

FINISHING	SIZE	WEIGHT	THICKNESS
<b>Cimento® Panels</b>	3600 x 1200 mm	86,4 kg	21,5 mm
	custom	20,00 kg/m <sup>2</sup>	21,5 mm

**CIMENTO® PANELS** has several product certifications that attest to its performance characteristics; the full list of product certifications can be found in the technical data sheet.



### Finishes and colours available

**CIMENTO® PANELS** is available in a wide range of standard colours based on natural pigments, providing a high degree of colour stability of the product. For this study, the base product “cement colour” without the addition of natural pigments, was examined.

### Installation

**CIMENTO® PANELS** can be easily installed using various fixing systems, depending on the project specifications and the client’s needs, in accordance with the instructions provided in the technical data sheets. **CIMENTO® PANELS** slabs can be processed using standard tools. It is recommended to use blades, discs, abrasives, etc. made of suitable material (e.g. diamond blades).

### Packaging

**CIMENTO® PANELS** are either packed on crates or pallets, depending on the means of transportation that is agreed with the customers

### Storage

**CIMENTO® PANELS** must be stored on a flat, level and dry surface, ensuring uniform support over the entire surface. Packages of the same size can be stacked on top of each other. Do not stack other materials that could damage the packaging or the slabs. Protect edges and corners from impact with suitable protectors to avoid possible chipping. Protect the slabs from contact with stains, knives and sharp or abrasive objects that could damage the **CIMENTO®** finish by storing it in the appropriate packaging.

Figure 3 - Representation of the CIMENTO® PANELS



## LCA INFORMATION

For the EPD declaration, the functional unit of matter and energy flows was referred to as:

1 m<sup>2</sup> of **CIMENTO® PANELS**

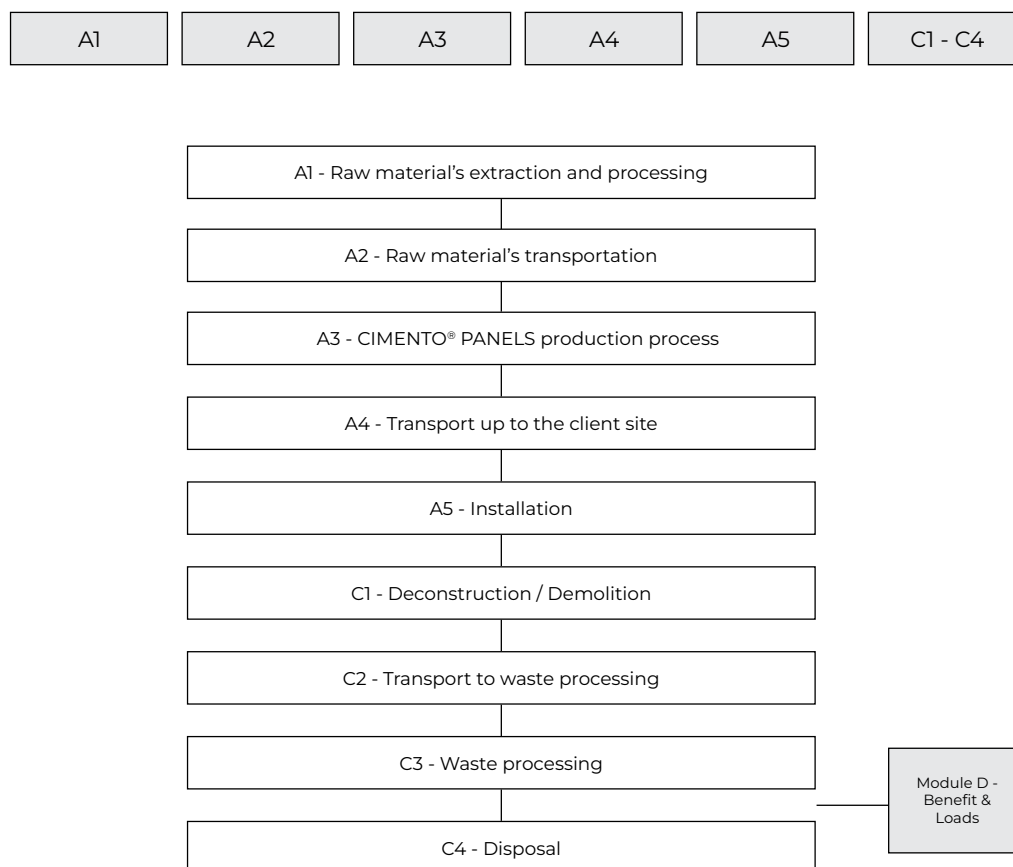
The declared unit is without the packaging. This EPD is referred to a single product EPD. The data used refer to the calendar year 2023. The LCA study was carried out during the year 2024.

### LCA PHASES

The approach adopted is "cradle to gate" (A1-A3) with modules C1-C4, module D and optional modules (A4-A5).

Below the process flow is shown

**Figure 4 - System Boundaries**





**Table 2: Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation**

STAGES	CONSTRUCTION PROCESS STAGE						USE STAGE					END OF LIFE STAGE				RESOURCE RECOVERY STAGE	
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demo- lition	Transport	Waste processing	Disposal	Reuse - Recovery - Recycling - potential
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Modules declared	X	X	X	X	X	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X
Geography	GLO	GLO	IT	GLO	GLO	-	-	-	-	-	-	-	GLO	GLO	GLO	GLO	GLO
Specific data used	> 90%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation products	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation sites	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

The mandatory modules are:

### Stage A1 - Raw material supply

This stage includes the production of the raw material required for 1 m<sup>2</sup> of **CIMENTO® PANELS**. At this stage, the raw materials composing the product and a number of auxiliary materials used in the processing stages of the same are purchased by SAI Industry S.r.l. from its suppliers.

Since the water in the product is taken from the network, to verify the correct allocation of the water consumed, a water balance was carried out by comparing the consumption reported in the bills for the reference year (2023) with the company's sources of consumption.

Electricity consists of energy taken from the grid, modelled with the Residual Mix 2023 for Italy, published by AIB for the year 2023 (AIB 2024) and energy produced by photovoltaics. The GWP-GHG emission coefficient for one kWh of the residual mix is 0,503 kg CO<sub>2</sub> eq.

### Stage A2 - Upstream transport

The transport of raw materials to the SAI Industry S.r.l. production site is characterized in this phase. The transportation distance was calculated using Google Maps and Ecotransit.

### Stage A3 - Manufacturing

The processes included in the "core" A3 stage of the product considered are divided as shown below in Table 3.

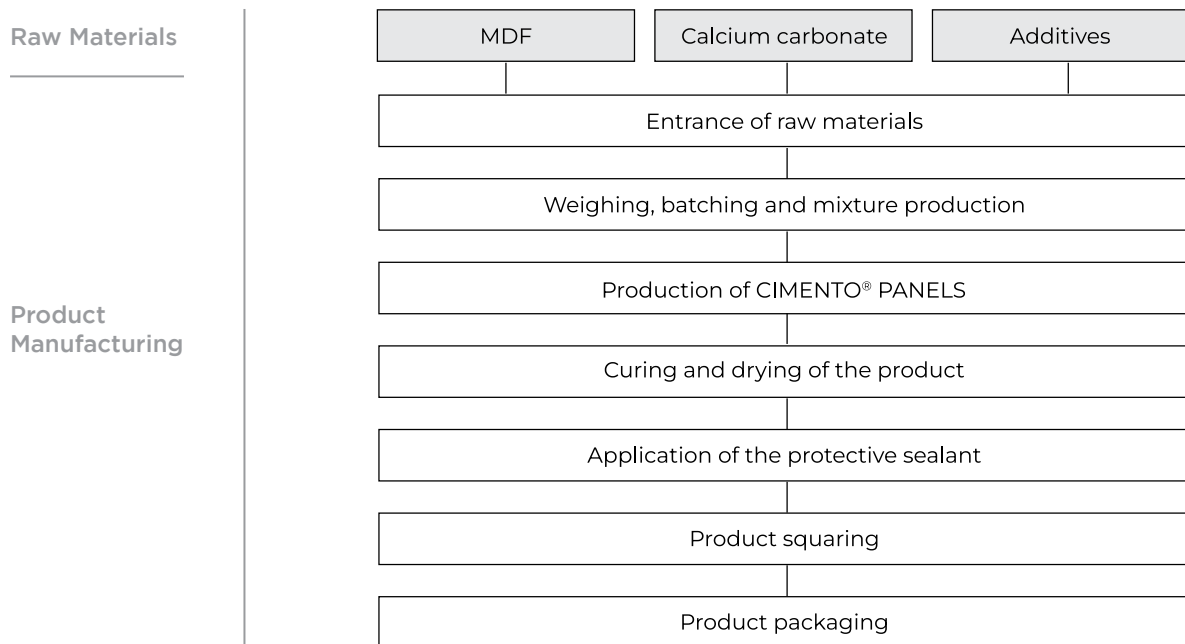
The results of air emissions analyses, specifically VOCs and total dust, were also included in this phase.

The process of carbonation was also included in this phase. Carbonation of concrete is a chemical reaction by which CO<sub>2</sub> in the ambient air enters the concrete and reacts with the hydration products in the concrete, meaning that some of the carbon dioxide emitted during cement production is transferred to the concrete during the use and end-of-life phases of a structure. In the production phase (A3), carbonation occurs during long-term storage prior to finishing.

Production outputs, if any, should also be considered at this stage. For the case study was considered:

- Production waste: This waste has been modelled as waste of inert material.
- Raw material packaging waste: All raw materials arrive packaged. These packages are disposed of and modelled according to the EUROSTAT 2022 data for packaging.

**Table 3 - List of A3 production processes**



### Stage C1 - C4: End of Life

The end-of-life phase includes dismantling (C1), transportation of the waste materials to the factory (C2), and any processes of reuse or transfer to end-of-life treatment (C3-C4).

As the end-of-life phases of the product (C1-C4) had to be included in the study, phase C1, i.e. dismantling, was considered first. As mentioned before, the **CIMENTO® PANELS** are applied to the surface using an adhesive. Therefore, as the dismantling is characterised by the use of a pneumatic hammer, the energy consumption of the pneumatic hammer was modelled, estimating a time of use of 3 minutes for the dismantling of 1 m².

With regard to phase C2, i.e. the transport of demolition waste, an average distance of 100km was estimated and modelled.

Phase C3, the treatment of waste for re-use, recovery and/or recycling, is included because, as reported earlier, according to OECD 2021 31,99% of a construction material waste is recycled. The process modelled within the software include crushing processes.

Finally, phase C4, the disposal of the final product, was modelled considering OECD (2021 data) data for landfilling (67,03%) and incineration (0,50%). In addition, the carbonation of the cement has been taken into account at this stage, as the waste will be stored for a long period of time (the exposure time is considered to be 100 years from landfill).

### MODULE D

Phase D, reuse/recovery/recycling potential, contains credits from the recycling of the product in module C3. The product can be collected and recycled for use in substitution of virgin raw aggregates. In the life cycle studied only D1 phase has been considered. The following contributions were calculated as:

- $Y$  (material yield): A yield of 99% was considered, assuming a pressure drop of 1% during the machining process. This choice was motivated by the production steps and the nature of the material;
- $M_{MR\ out}$ : **CIMENTO® PANELS** is considered as a construction material, which is recycled for a 31,99%, according to OECD 2021;
- $M_{MR\ in}$ : having no recycled material input, this data is zero, since the raw materials used are virgin;
- $E_{MR\ after\ EoW\ out}$ : a dataset of the virgin raw material was used;
- $E_{VM\ Sub\ out}$ : a dataset of a recycled of raw material was used (only crushing process);
- $Q_{Rout}/Q_{sub}$ : considered as 1.

The optional modules are:

### Stage A4 - Downstream transportation

For step A4, all orders shipped in the reference year (2023) were recorded with the data required for the calculations:

- Quantities shipped per order (pieces);
- Destination information (customer address);
- Type of finishing, if applicable;
- Indication of the means of transport used.

### Stage A5 - Installation

Regarding step A5, this step has been partially considered as the disposal of the materials that make up the product packaging has been modelled using the OECD 2021 data on packaging waste management. However, as far as installation is concerned, it is outside the scope of the system as it is a service provided only if requested by the customer; in other cases, although the company provides the details of product installation, it is not possible to have direct control over it as it depends on the customer and the company has no responsibility or inference.

## CUT-OFF CRITERIA

According to the cut-off rule described above, the flow of sandblasted **CIMENTO® PANELS** was excluded from the life cycle of the product under study (1 m<sup>2</sup> of **CIMENTO® PANELS**), as it represents 2.97% of the total **CIMENTO® PANELS** sold in 2023.

Moreover, indirect flows such as: capital goods, routine and/or extraordinary machine maintenance, employer travel, employee commuting, office utilities, and gas used for heating the company were excluded from the study because they are not directly related to the production of the studied product and, for some of them, the company does not have direct control.

## ALLOCATION PROCEDURES

In this study, a mass allocation of production-related electricity consumption was made for the different products manufactured by the company, based on the tonnes produced. Based on the sales data provided by the company for the year 2023, the production was divided into five macro-categories:

- **CIMENTO® FORMELLE**;
- **CIMENTO® PANELS**;
- Products with a different substrate but similar production process to **CIMENTO® PANELS**;
- **CIMENTO® WILL** slabs;
- Products with a production process similar to **CIMENTO® WILL**.

For production machines, the macro-categories are reduced to 3: **CIMENTO® FORMELLE**, **CIMENTO® PANELS** and similar, **CIMENTO® WILL** and similar. For each process step related to the machinery for the production of 1 m<sup>2</sup> of **CIMENTO® PANELS**, the macro-category of product for which it is used has been indicated and, consequently, the consumption for production related to **CIMENTO® PANELS** has been allocated.

## DATA QUALITY

The data used for the environmental impact assessment are:

- Specific data: data collected at SAI Industry S.r.l. site and referred to the year 2023 for the core activities (consumption, distances etc) and datasets from Ecoinvent 3.10. The specific data used are more than 90%;
- Proxy data contribute to the final impacts is <5%, due to the fact that specific data has usually been selected.

## CONTENT INFORMATION

Table 4: Content information for raw materials

COMPONENT	WEIGHT%	BIOGENIC MATERIAL WEIGHT (KG)	KG C/KG
MDF Panel	< 80,00%	1,02E-02	6,58E-04
Clacium Carbonate	> 15,00%	0,00E+00	0,00E+00
Additivies	< 5,00%	0,00E+00	0,00E+00

Table 5: Content information for packaging materials

COMPONENT	WEIGHT% (VERSUS THE PRODUCT)	BIOGENIC MATERIAL WEIGHT (KG)	KG C/KG
Pallet	2,40%	6,07E-03	1,18E-02
Plastic strapping	0,01%	0,00E+00	0,00E+00
Cardboard corners	1,40%	1,38E-02	4,60E-02
White protective sheet	0,28%	0,00E+00	0,00E+00
Stretch film	0,02%	0,00E+00	0,00E+00
Wooden crate	2,59%	7,05E-03	1,27E-02
Protective sheet	0,03%	0,00E+00	0,00E+00
Polystyrene	0,03%	0,00E+00	0,00E+00

No dangerous substances from the candidate list of SVHC for Authorisation have been used in the production of the product studied.  
As REACH regulation, the product isn't classified as dangerous.

## ENVIRONMENTAL INDICATORS

**Table 6: Mandatory indicators legend**

MANDATORY INDICATORS	ACRPNYM	UNIT
Global Warming Potential fossil fuels	<b>GWP-fossil</b>	kg CO <sub>2</sub> eq.
Global Warming Potential biogenic	<b>GWP-biogenic</b>	kg CO <sub>2</sub> eq.
Global Warming Potential land use and land use change	<b>GWP-luluc</b>	kg CO <sub>2</sub> eq.
Global Warming Potential total	<b>GWP-total</b>	kg CO <sub>2</sub> eq.
Depletion potential of the stratospheric ozone layer	<b>ODP</b>	kg CFC11 eq.
Acidification potential, Accumulated Exceedance	<b>AP</b>	mol H <sup>+</sup> eq.
Eutrophication potential, fraction of nutrients reaching freshwater end compartment	<b>EP-freshwater</b>	kg P eq.
Eutrophication potential, fraction of nutrients reaching marine end compartment	<b>EP-marine</b>	kg N eq.
Eutrophication potential, Accumulated Exceedance	<b>EP-terrestrial</b>	mol N eq.
Formation potential of tropospheric ozone	<b>POCP</b>	kg NMVOC eq.
Abiotic depletion potential for non-fossil resources	<b>ADP-minerals&amp;metals</b>	kg Sb eq.
Abiotic depletion for fossil resources potential	<b>ADP-fossil</b>	MJ
Water (user) deprivation potential, deprivation-weighted water consumption	<b>WDP</b>	m <sup>3</sup>

**Table 7: Additional indicators legend**

ADDITIONAL INDICATORS	ACRONYM	UNIT
Global Warming Potential - Greenhouse gases	<b>GWP-GHG<sup>1</sup></b>	kg CO <sub>2</sub> eq.
Particulate matter emissions	<b>PM</b>	Desease incidence
Ionising radiation, human health	<b>IRP</b>	Kg U235 eq.
Ecotoxicity (freshwater)	<b>ETP-fwl</b>	CTUe
Human toxicity, cancer effects	<b>HTC-c</b>	CTUh
Human toxicity, non-cancer effects	<b>HTP-nc</b>	CTUh
Land use related impacts / soil quality	<b>SQP</b>	Pt

<sup>1</sup> This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO<sub>2</sub> is set to zero.

**Table 8: Resource use indicators legend**

RESOURCE USE INDICATORS	ACRONYM	UNIT
Use of renewable primary energy excluding renewable primary energy resources used as raw materials	<b>PERE</b>	MJ
Use of renewable primary energy resources used as raw materials	<b>PERM</b>	MJ
Total use of renewable primary energy resources	<b>PERT</b>	MJ
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	<b>PENRE</b>	MJ
Use of non-renewable primary energy resources used as raw materials	<b>PENRM</b>	MJ
Total use of non-renewable primary energy re-sources	<b>PENRT</b>	MJ
Use of secondary material	<b>SM</b>	kg
Use of renewable secondary fuels	<b>RSF</b>	MJ
Use of non-renewable secondary fuels	<b>NRSF</b>	MJ
Use of net fresh wate	<b>FW</b>	m <sup>3</sup>

**Table 9: Waste production indicators legend**

WASTE PRODUCTION INDICATORS	ACRONYM	UNIT
Hazardous waste disposed	<b>HDW</b>	kg
Non-Hazardous waste disposed	<b>NHDW</b>	kg
Radioactive waste disposed	<b>RWD</b>	kg

**Table 10: Output flows indicators legend**

OUTPUT FLOWS INDICATORS	ACRONYM	UNIT
Components for re-use	<b>CRU</b>	kg
Materials for recycling	<b>MRF</b>	kg
Materials for energy recovery	<b>MER</b>	kg
Exported energy, electricity	<b>EE</b>	MJ
Exported energy, thermal	<b>EET</b>	MJ



## ENVIRONMENTAL RESULTS

POTENTIAL ENVIRONMENTAL IMPACT –  
mandatory indicators according to EN15804:2012+A2:2019/AC:2021

Table 11: Mandatory indicators for potential environmental impact

RESULTS PER FUNCTIONAL OR DECLARED UNIT									
INDICATOR	UNIT	A1-A3	A4	A5	C1	C2	C3	C4	D
<b>GWP-fossil</b>	kg CO <sub>2</sub> eq.	<b>2,82E+01</b>	3,39E-02	1,29E-01	2,63E-02	3,84E-01	1,93E-01	3,52E+00	-8,06E+04
<b>GWP-biogenic</b>	kg CO <sub>2</sub> eq.	<b>2,29E+01</b>	2,64E-04	2,52E+01	1,03E-03	4,24E-03	7,69E-03	4,50E+01	-2,89E+05
<b>GWP-luluc</b>	kg CO <sub>2</sub> eq.	<b>2,24E-02</b>	9,60E-06	3,55E-05	3,56E-05	1,57E-04	2,20E-04	9,70E-04	-8,54E+01
<b>GWP-total</b>	<b>kg CO<sub>2</sub> eq.</b>	<b>5,11E+01</b>	<b>3,41E-02</b>	<b>2,54E+01</b>	<b>2,73E-02</b>	<b>3,89E-01</b>	<b>2,01E-01</b>	<b>4,85E+01</b>	<b>-3,70E+05</b>
<b>ODP</b>	kg CFC 11 eq.	<b>6,47E-07</b>	5,08E-10	8,12E-10	1,78E-10	5,67E-09	1,30E-09	2,22E-08	-2,07E-03
<b>AP</b>	mol H <sup>+</sup> eq.	<b>1,31E-01</b>	1,04E-04	4,08E-04	1,36E-04	8,79E-04	9,39E-04	1,12E-02	-5,00E+02
<b>EP-freshwater</b>	kg P eq.	<b>6,22E-03</b>	1,88E-06	1,80E-04	1,19E-05	3,03E-05	7,27E-05	4,93E-03	-1,82E+01
<b>EP-marine</b>	kg N eq.	<b>3,52E-02</b>	3,30E-05	3,37E-03	2,58E-05	2,04E-04	1,86E-04	9,23E-02	-1,39E+02
<b>EP-terrestrial</b>	mol N eq.	<b>4,07E-01</b>	3,59E-04	1,28E-03	2,61E-04	2,20E-03	1,89E-03	3,49E-02	-1,72E+03
<b>POCP</b>	kg NMVOC eq.	<b>1,54E-01</b>	1,44E-04	7,98E-04	7,79E-05	1,23E-03	5,66E-04	2,18E-02	-5,56E+02
<b>ADP minerals&amp;metals**</b>	kg Sb eq.	<b>1,04E+02</b>	3,28E-02	1,42E-01	2,30E-01	5,28E-01	1,67E+00	3,87E+00	-3,26E+05
<b>ADP fossil**</b>	MJ	<b>1,56E-04</b>	7,24E-08	8,42E-08	1,46E-07	1,25E-06	1,82E-07	2,30E-06	-5,44E-01
<b>WDP**</b>	m <sup>3</sup>	<b>1,39E+01</b>	1,62E-03	-3,82E-01	4,53E-03	2,49E-02	3,19E-02	-1,05E+01	-7,66E+04

The module C is included in the EPD, so it's forbidden the use of the results of modules A1-A3 without considering the results of module C.

\* Disclaimer 1: 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.

\*\*Disclaimer 2: 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.

## POTENTIAL ENVIRONMENTAL IMPACT – additional mandatory and voluntary indicators

Table 12: Additional indicators for potential environmental impact

RESULTS PER FUNCTIONAL OR DECLARED UNIT									
INDICATOR	UNIT	A1-A3	A4	A5	C1	C2	C3	C4	D
<b>GWP-GHG<sup>1</sup></b>	kg CO2 eq.	<b>2,81E+01</b>	3,38E-02	1,30E+00	2,63E-02	3,84E-01	1,93E-01	3,57E+01	-8,04E+04
<b>PM</b>	Disease incidence	<b>2,28E-06</b>	1,71E-09	5,47E-09	1,15E-09	2,85E-08	8,94E-09	1,50E-07	-1,03E-02
<b>IRP*</b>	Kg U235 eq.	<b>1,66E+00</b>	3,04E-04	1,88E-03	3,59E-03	4,47E-03	2,84E-02	5,16E-02	-3,53E+03
<b>ETP-fw<sup>1</sup>**</b>	CTUe	<b>2,44E+02</b>	1,18E-01	3,68E+01	1,68E-01	1,81E+00	1,30E+00	1,01E+03	-6,29E+05
<b>HTC-c**</b>	CTUh	<b>3,57E-07</b>	1,24E-10	2,55E-10	3,16E-11	2,01E-09	2,16E-10	6,97E-09	-1,88E-03
<b>HTP-nc**</b>	CTUh	<b>3,93E-07</b>	3,76E-10	1,84E-07	2,57E-10	4,28E-09	1,10E-09	5,03E-06	-1,23E-03
<b>SQP**</b>	Pt	<b>1,26E+03</b>	1,93E-01	1,42E+00	6,02E-02	3,26E+00	3,67E-01	3,88E+01	-7,34E+06

The module C is included in the EPD, so it's forbidden the use of the results of modules A1-A3 without considering the results of module C.

\* Disclaimer 1: 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.

\*\*Disclaimer 2: 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.

<sup>1</sup> This indicator accounts for all greenhouse gases except biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. As such, the indicator is identical to GWP-total except that the CF for biogenic CO2 is set to zero.

## USE OF RESOURCES

Table 13: Indicators for resources use

RESULTS PER FUNCTIONAL OR DECLARED UNIT									
INDICATOR	UNIT	A1-A3	A4	A5	C1	C2	C3	C4	D
<b>PERE*</b>	MJ	<b>1,64E-01</b>	4,65E-03	6,85E+00	4,77E-02	7,17E-02	7,79E+01	6,49E-01	6,92E+04
<b>PERM*</b>	MJ	<b>2,23E+02</b>	0,00E+00	-6,83E+00	0,00E+00	0,00E+00	-7,76E+01	0,00E+00	-1,36E+06
<b>PERT*</b>	<b>MJ</b>	<b>2,23E+02</b>	<b>4,65E-03</b>	<b>2,37E-02</b>	<b>4,77E-02</b>	<b>7,17E-02</b>	<b>3,09E-01</b>	<b>6,49E-01</b>	<b>-1,29E+06</b>
<b>PENRE</b>	MJ	<b>-3,57E+01</b>	-3,65E-01	1,48E-01	2,41E-01	-3,89E+00	1,74E+00	4,06E+00	-3,33E+05
<b>PENRM</b>	MJ	<b>1,44E+02</b>	3,99E-01	0,00E+00	0,00E+00	4,44E+00	0,00E+00	0,00E+00	-7,60E+03
<b>PENRT</b>	<b>MJ</b>	<b>1,08E+02</b>	<b>3,44E-02</b>	<b>1,48E-01</b>	<b>2,41E-01</b>	<b>5,54E-01</b>	<b>1,74E+00</b>	<b>4,06E+00</b>	<b>-3,41E+05</b>
<b>SM</b>	kg	<b>0,00E+00</b>	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>RSF</b>	MJ	<b>0,00E+00</b>	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>NRSF</b>	MJ	<b>0,00E+00</b>	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
<b>FW</b>	m <sup>3</sup>	<b>3,91E-01</b>	4,92E-05	-8,86E-03	1,68E-04	7,41E-04	1,17E-03	-2,43E-01	-1,97E+03

The module C is included in the EPD, so it's forbidden the use of the results of modules A1-A3 without considering the results of module C.

\*The option chosen for the calculation of the primary energy use indicators is option B as set out in Annex 3 of the PCR 2019:14 version 1.3.4.

## WASTE PRODUCTION

Table 14: Indicators for waste production

RESULTS PER FUNCTIONAL OR DECLARED UNIT									
INDICATOR	UNIT	A1-A3	A4	A5	C1	C2	C3	C4	D
HW	kg	<b>2,83E-03</b>	3,21E-06	4,77E-06	6,71E-07	3,72E-05	4,45E-06	1,31E-04	-5,77E+00
NHW	kg	<b>6,70E+00</b>	1,45E-02	2,37E+00	8,39E-04	2,58E-01	3,94E-03	6,48E+01	-1,22E+04
RWD	kg	<b>4,31E-04</b>	7,45E-08	4,61E-07	8,76E-07	1,10E-06	6,90E-06	1,26E-05	-9,02E-01

The module C is included in the EPD, so it's forbidden the use of the results of modules A1-A3 without considering the results of module C.

## OUTPUT FLOWS

Table 15: Indicators for output flows

RESULTS PER FUNCTIONAL OR DECLARED UNIT									
INDICATOR	UNIT	A1-A3	A4	A5	C1	C2	C3	C4	D
CRU	kg	<b>0,00E+00</b>	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
MRF	kg	<b>0,00E+00</b>	0,00E+00	3,20E-01	0,00E+00	0,00E+00	3,20E-01	0,00E+00	0,00E+00
MER	kg	<b>0,00E+00</b>	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EE	MJ	<b>3,75E+00</b>	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
EET	MJ	<b>0,00E+00</b>	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

The module C is included in the EPD, so it's forbidden the use of the results of modules A1-A3 without considering the results of module C.

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

## REFERENCES

REFERENCES	DETAIL
<b>Ecoinvent</b>	Ecoinvent database 3.10.
<b>EN 15804:2012+A2:2019+A2:2021</b>	Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.
<b>EU)1907/2006 (REACH)</b>	Regulation (EC) No 1907/2006
<b>Eurostat</b>	<a href="https://ec.europa.eu/eurostat/data/database">https://ec.europa.eu/eurostat/data/database</a>
<b>OECD</b>	<a href="https://www.oecd.org/">https://www.oecd.org/</a>
<b>GPI</b>	GENERAL PROGRAMME INSTRUCTIONS FOR THE INTERNATIONAL EPD® SYSTEM - version 4.00
<b>GPI</b>	GENERAL PROGRAMME INSTRUCTIONS FOR THE INTERNATIONAL EPD® SYSTEM - version 5.00
<b>PCR</b>	PCR 2019:14 VERSION 1.3.4 - Construction products
<b>UNI EN ISO 9001</b>	Quality management systems - Requirements
<b>UNI EN ISO 14001</b>	Environmental management systems - Requirements with guidance for use
<b>UNI EN ISO 14025</b>	Environmental labels and declarations - Type III environmental declarations - Principles and procedures
<b>UNI EN ISO 14040</b>	Environmental management - Life cycle assessment - Principles and framework
<b>UNI EN ISO 14044</b>	Environmental management - Life cycle assessment - Requirements and guidelines
<b>UNI EN 16449:2014</b>	Wood and wood-based products - Calculation of the biogenic carbon content of wood and conversion to carbon dioxide
<b>UNI EN 16757:2023</b>	Sustainability of construction works - Environmental product declarations - Product Category Rules for concrete and concrete elements