Environmental Product Declaration

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

ACRYLIC ENAMELS

(GLOSS, SATIN AND MATTE FINISHES)

from

Pinturas Adoral

Programme:	The International EPD System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD:	EPD of multiple products, based on a representative product
EPD registration number:	EPD-IES-0033461:001
Version date:	2026-09-25
Validity date:	2031-09-24

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

GENERAL INFORMATION

Programme Information	
Programme:	The International EPD® System
Address:	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
Website:	www.environdec.com
E-mail:	support@environdec.com

Product Category Rules (PCR)
CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product Category Rules (PCR): ***PCR 2019:14, Construction products (EN 15804:A2) VERSION 2.0.1***
PCR review was conducted by: *The Technical Committee of the International EPD System. A full list of members is available on www.environdec.com. The review panel may be contacted via support@environdec.com.* *Review chair: Rob Rouwette (chair), Noa Meron (co-chair).*

Third-party Verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via: ☒ **Individual EPD verification without a pre-verified LCA/EPD tool** Third-party verifier: Ana de la Puente Salazar, IK Ingenieria Approved by: International EPD System
Procedure for follow-up of data during EPD validity involves third party verifier: ☐ Yes ☒ No

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

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit 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 identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.
For further information about comparability, see EN 15804 and ISO 14025.

INFORMATION ABOUT EPD OWNER

Owner of the EPD:
Pinturas Adoral

Address:
Autovía A-31 P.K.41,8
02630 La Roda (Albacete), Spain

Contact:
Marta Cuesta Centelles
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Address and contact information of the LCA practitioner commissioned by the EPD owner:
Marcel Gómez Consultoría Ambiental S.L.
C/Navarra 66 Edificio B Bajos 3ª 08320 El Masnou (Barcelona), Spain
Email: info@marcelgomez.com
Telephone: +34 630 64 35 93

Description of the organisation:
Pinturas Adoral — with more than 30 years of experience — has always been dedicated to serving its customers with excellence and environmental responsibility. At Adoral, we are fully committed to sustainability, ensuring that all our paints meet the most demanding quality and environmental standards. Our products are manufactured under a strict European Quality Control System and undergo comprehensive shipping inspections for all our distributors. Pinturas Adoral offer a wide range of colors developed with state-of-the-art technology to meet the needs of modern design and construction.

Product-related or management system-related certifications:
Pinturas Adoral has the certifications indicated below:

- **ISO 9001:2015** Quality Management Systems: certificate num. **ES143920 - 1**
- **ISO 14001:2015** Environmental Management Systems: certificate num. **ES143919 - 1**

PRODUCT INFORMATION

Product name: Acrylic enamels

Product identification: Water-based acrylic enamels.

Visual representation of the product:

UN CPC code: 3511 Paints and varnishes and related products

Product description:
This EPD covers all ranges of acrylic enamels (*Esmalte Acrílico*) from Pinturas Adoral. This EPD is of multiple products, based on a representative product. The EPD covers the following products: acrylic enamels available in different colours based on the colour chart and in matte, gloss and satin finishes.

For the representative product, the selection has been done according to the product with highest sales ratio. The declared results are based on acrylic enamel (*Esmalte Acrílico*) with white colour and gloss finish.

The following is a brief description of the acrylic enamel products:

Acrylic Enamels: This is a water-based acrylic enamel with high coverage power, excellent resistance, and durability. In addition, it emits no solvent odor, making it ideal for use in spaces where odor control is important, such as kitchens, children's areas, hotels, and other indoor environments.

The products have a technical lifespan of 10 years. This lifespan does not affect the environmental impact results reported in the EPD. According to the company, under optimal conditions, the products will last up to 10 years.

Technical specifications of the product:

PARAMETER	VALUE
Density	1,19 kg/L ± 0,05 (UNE-ISO 2811-1)
Finish	Matt, Gloss, Satin
Color	White
Drying time	<1,5h
PH	8-9
Maximum repainting	Unlimited
Diluent	Water
Flash point Nonflammable	Non-flammable
VOC content	Maximum 0,119 g/kg
Products used for installation	Brush, roller or spray gun
Product life	10 years

Main Manufacturing Processes:

1. Reception of Raw Materials and Incoming Quality Control (QC)

All raw materials are received together with their Certificates of Analysis. Each production batch is assigned the corresponding raw materials together with the batch used in each production run to ensure traceability. This includes all raw materials such as binders (acrylics, alkyds, epoxy esters or hybrid emulsions/resins), pigments (mainly titanium dioxide, anticorrosive pigments such as zinc phosphate or calcium borosilicate), fillers/extenders, solvents or water (depending on the system), and additives (dispersants, wetting agents, anticorrosive agents, defoamers, thickeners or rheology modifiers, coalescents or driers, flow and levelling agents, preservatives/biocides).

At reception, the resin solids content is analyzed.

2. Premix (Preparation of the Liquid Phase)

In the mixing tank, the main liquid medium (water or solvent) is charged first. The dispersant/wetting agent and the initial defoamer are then added. Under moderate agitation, pigments and fillers are gradually added to form the grinding or dispersion paste. For water-based solvents, pH, viscosity and specific gravity are adjusted.

3. Pigment and Filler Dispersion

In the case of water-based solvents, water is the main ingredient used in the preparation of the pigment pastes. Fillers and pigments are dissolved/dispersed in it. Water is added automatically by means of counters/meters. Dispersion is carried out in a Dispermix, where mechanical shear produces a finer and more homogeneous paste, resulting in finer particles.

4. Incorporation of the Binder (Addition of the Resin)

Once dispersion or grinding has been completed, the remaining additives and/or resin are added. In the case of water-based enamels, the remaining acrylic resin is added.

For water-based enamels: anticorrosive additives, and flow and levelling agents. The final defoamer is added and viscosity is adjusted with water. pH, viscosity and specific gravity are then fine-tuned.

5. Filtration, Deaeration, and Quality Control

In-process quality control tests are carried out, including viscosity (Brookfield or Ford Cup, Krebs-Stormer), pH, density, colour, gloss, solids content, hiding power, adhesion and stability.

6. Filling, Labeling, and Dispatch

Once the enamel is finished, it is filled into suitable containers (metal or plastic). The containers are hermetically sealed and labelled with the corresponding colour and batch number, and labelled in accordance with **CLP/GHS** regulations.

The products are then palletised and stored under appropriate conditions. For water-based solvents: protect from frost and excessive heat.

Name and location of production site:
Pinturas Adoral, Autovía A-31, P.K.41,8, 02630 La Roda, Albacete (Spain)

More information about the products can be found at: https://www.pinturasadoral.es/

CONTENT DECLARATION

The mass (weight) of one unit of a product, as purchased or per declared unit: 0,3 kg/m^2 of enamel, is required to coat two layers.

Content of the product in the form of a list of materials and substances, and their mass:

Product content	Mass, kg (included range of products)*	Mass, kg (representative product) **	Post-consumer recycled material, mass-% of declared unit	Biogenic material, mass-% of declared unit	Biogenic material, kg C/ declared unit
Water	0,04-0,07	0,04-0,06	0%	0%	0
Titanium dioxide	0,05-0,06	0,05-0,06	0%	0%	0
Resin	0,18-0,23	0,18-0,23	0%	0%	0
Others	0,01-0,05	0,01-0,05	0%	0%	0
TOTAL	**0,3 kg** (two layers of coating)	**0,3 kg** (two layers of coating)	**0%**	**0%**	**0**

*Variations in the content declaration across the range of products covered by the EPD are below 5% and are due to the different available finishes. Other colour finishes may contain different pigments replacing titanium dioxide.
** Due to confidentiality exact weight composition cannot be displayed

Packaging materials	Mass, kg*	Mass-% (versus the product)	Biogenic material, kg C/ declared unit
Plastic bottle	1,43E-02	4,76%	0
Plastic film	2,42E-03	0,81%	0
Metallic bottle	8,00E-04	0,27%	0
Cardboard box	2,61E-03	0,87%	1,30E-03
Pallet	1,26E-02	4,19%	6,28E-03
TOTAL	**3,27E-02**	**10,9%**	**7,59E-03**

1 kg biogenic carbon in the product/packaging is equivalent to the uptake of 44/12 kg of CO_2.
*The packaging is only presented for the representative product.

Information on the environmental and hazardous/toxic properties of a substances contained in the product:
At the date of issue of this declaration, there is no “Substance of Very High Concern” (SVHC) in concentration above 0,1% by weight, and neither do their packaging, following the European REACH regulation (Registration, Evaluation, Authorization and Restriction of Chemicals).

LCA INFORMATION

Declared unit:
Extraction of raw materials, transportation, manufacturing, transportation to the customer, installation, use, transportation to the manager and end of life of the amount of product needed to cover 1 m^2 of surface two times. For acrylic enamels gloss white this amount corresponds to 0,3 kg of enamels applying two layers. The enamel coverage rate is approximately 3,33 m^2 per kg for two coating layers.

Conversion factor to mass if mass is not used as declared unit: 0,3 kg/m^2
Weight of the representative product: 0,3 kg/m^2

Total thickness of coating: 0,25 mm

Reference service life: 10 years, Reference service life is equal to technical service life.

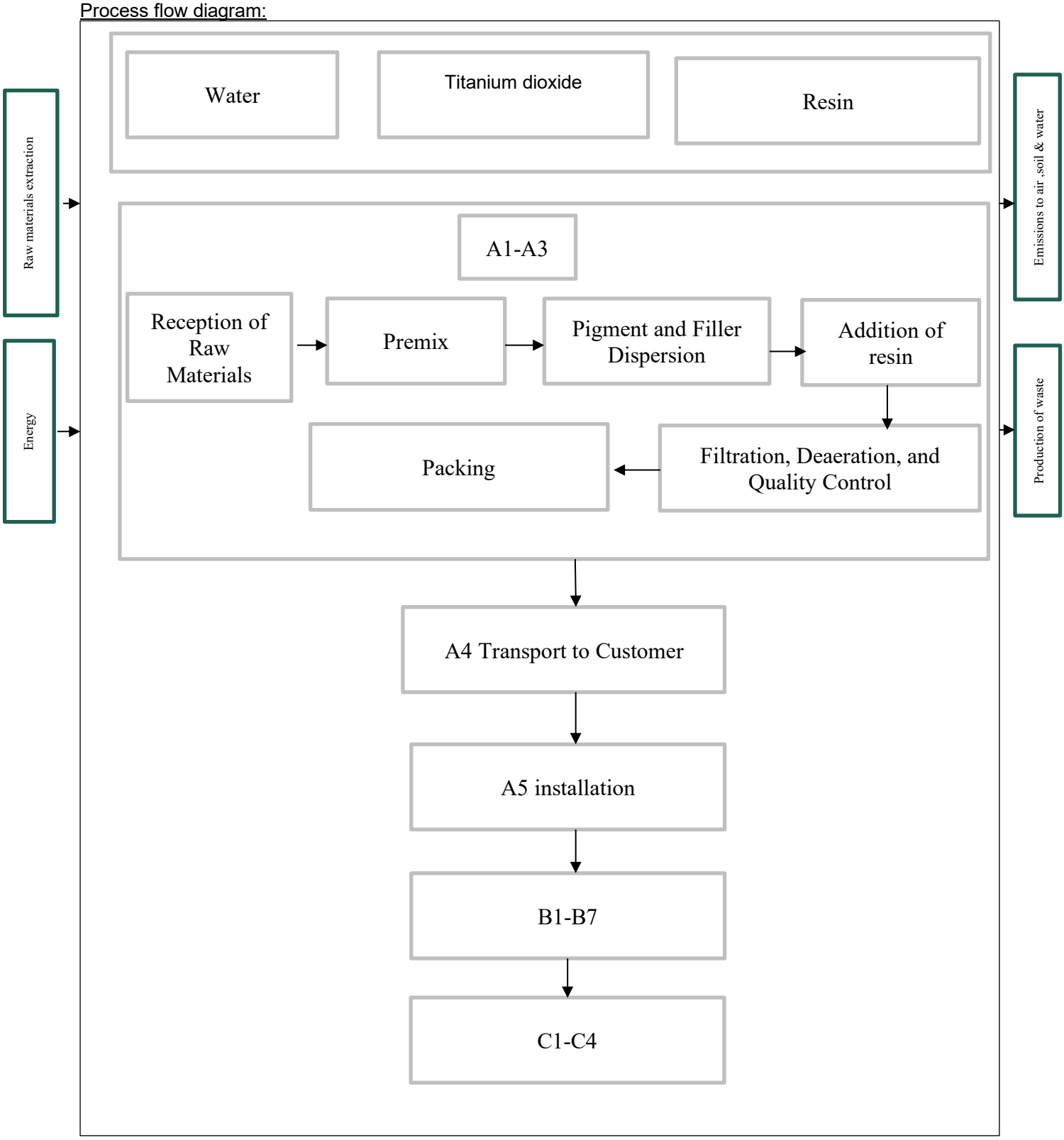
Time representativeness:
The primary data were obtained from the manufacturing plant and refer to the year 2024 (1st January to 31st December).

Geographical scope:
Europe for raw materials production and transportation to the manufacturing plant and Spain for production, distribution, installation, use and end of life.

Database(s) and LCA software used:
Ecoinvent v3.11 and SimaPro v10.2.0.2. The Environmental Footprint v3.1 (EF) impact assessment method has been used for calculating environmental performance.

Description of system boundaries:
Cradle to gate with options, modules C1–C4, module D and with optional modules (A4-A5 and B1-B7).

Process flow diagram:



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

	Product stage			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 demolition	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	X	X	X	X	X	X	X	X	X	X	X	X
Geography	EU	EU	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES	ES
Share of primary data	2,44%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	<10%			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

EU = Europe, ES = Spain

Share of primary data

Process	Source type	Source	Reference year	Data category	Share of Primary data, of GWP-GHG results for A1-A3
Raw materials for manufacturing	Collected data	EPD owner	2024	Secondary data	0%
Generation of energy (electricity) used in manufacturing of product	Collected data	Electricity Supplier	2024	Primary data	0,56%
Generation of energy(diesel) used in manufacturing of product	Collected data	EPD owner	2024	Primary data	1,88%
Transport of raw materials	Collected data	EPD owner	2024	Secondary data	0%
Other process	Databases	Ecoinvent v3.11	2024	Secondary data	0%
Production of packaging	Collected data	EPD owner	2024	Secondary data	0%
Total share of primary data, of GWP-GHG results for A1-A3					**2,44%**

The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

Product life cycle

A1-A3 Product stage

O A1 Raw materials supply: this module takes into account the extraction and processing of raw materials and the energy that is produced prior to the manufacturing process under study.

O A2 Transport: this module includes the transport of the different raw materials from the manufacturer to the factory. The distance and type of concrete truck for each raw material has been introduced.

O A3 Manufacturing: this module includes the consumption of energy and packaging materials used during the manufacturing process. At the same time, the factory emissions not originated in the combustion of fossil fuels are analyzed, as well as the transport and management of the factory-produced waste. The manufacture of enamels consists mainly of a dispersion of different components. Stirrers are used to carry out this process that help to disperse, disintegrate and mix the enamel components. In a first phase, the solvent (in this case water), the additives, pigments and fillers are added until a homogeneous mixture is obtained. To determine if an adequate degree of dispersion has been reached, a fineness control is made up to the desired microns, which will determine the dispersion time. Once the desired degree of fineness has been achieved, the completion with the emulsion or binder is carried out and the characteristics of the final product in quality control are verified. Once the enamel has passed all the controls, it is packed. The production losses of 2% are considered.

A4-A5 Construction process stage

O A4 Transport

PARAMETER	VALUE/DESCRIPTION
Fuel type and consumption of vehicle or vehicle type used for transport e.g. long distance truck, boat, etc.	Truck of more than 32 t. Fuel consumption: 31,1 L/100 km
Transport of product to customers	Distance weighted average Ship: 7,08E+02 km Truck: 4,39E+02 km
Capacity utilisation (including empty returns)	% assumed in Ecoinvent
Bulk density of transported products	1,19 kg/L (Esmalte Acrílico)
Volume capacity utilisation factor	1

O A5 Construction/Installation

PARAMETER	VALUE/DESCRIPTION
Auxiliary materials for installation	Nil
Use of water	2,25E-02 m^3/DU Water is used at 7,5% of the product's weight in the enamel application.
Use of other resources	Nil
Quantitative description of the type of energy (regional mix) and the consumption during the installation process	Electricity: 1,84E-04 kWh/DU (Esmalte acrílico) The company has defined an application scenario consisting of 10% mechanical and 90% manual operations.
Wastage of materials on the building site before waste processing, generated by the product's installation (specified by type)	Product losses (2%) during installation
Output materials as results of waste processing at the building site e.g. of collection for recycling, for energy recovering, disposal (specified by route)	Product losses and packaging waste are 100% landfilled. A 100% landfill scenario has been assumed as a conservative approach. The transport distance of 50 km was assumed for delivery of the waste to the waste management site.

B Use stage

The product does not require any maintenance (B2), repair (B3), replacement (B4), refurbishment (B5), operational energy use (B6) or operational water use (B7) during its Reference Service Life. So all the modules remains zero without any impact.

O Use (B1): accounts the VOC emissions.

C End of life stage

O C1 Deconstruction/demolition: The deconstruction and/or dismantling of the product has energy consumption which is assumed from the PCR (1,1 kWh/ton). The energy consumption per DU is 3,30E-04 kWh.

O C2 Transport to waste processing: the model use for the transportation (see A4, transportation to the building site) is applied. The truck chosen is Transport, freight, lorry, 16-32 metric ton, diesel, EURO 5 {RER}| transport, freight, lorry, 16-32 metric ton, diesel, EURO 5 | Cut-off, S and a distance selected is 80 km.

O C3 Waste processing for reuse, recovery and/or recycling: the product is considered to be landfilled without reuse, recovery or recycling.

O C4 Disposal: the product is 100% landfilled. A 100% landfill scenario has been assumed as a conservative approach.

D Reuse-Recovery-Recycling potential

Module D calculates the potential environmental benefits of the recycling or reuse of materials. This product has not considerable benefits due to recycling or/and reuse.

More information

Electricity mix:
The energy used at the factory is supplied by a combination of an on-site photovoltaic system installed at the factory (32,31%) and the residual electricity mix from an external supplier ENDESA (67,69%). The 2024 residual electricity mix was used. The ENDESA residual mix consists of 7,5% renewable energy, 38,4% nuclear, 31% natural gas, 9,2% coal, 2,3% fuel/gas, 9,8% other non-renewable sources, and the remainder from other sources.

The GWP-GHG emission factor for electricity of the photovoltaic system is 1,92E-06 kg CO_2eq/kWh, while the ENDESA electricity mix has a GWP-GHG of 3,94E-01 kg CO_2eq/kWh. The combined total GWP-GHG for the electricity consumption is 2,67E-1 kg CO_2eq/kWh.

Allocation rules:
The modularity principle, as well as the polluter-payer principle have been followed.

The data obtained from the composition of the product is specific to the manufacturer, and, whenever possible, allocations based on economic and physical criteria have been avoided. However, in cases where this has not been possible (mass allocation of processes with multiple outputs that obtain more than one product), the allocation has been made in accordance with the recommendations of ISO 14004:2006 and the corresponding PCR.

A mass allocation has been made with physical criteria when necessary, i.e. in production consumption and in waste generation during the manufacture of the product.

Cut off rules:
LCI data are according to EN 15804 include a minimum of 99% of total inflows (mass and energy) per unit process and 95% of total inflows (mass and energy) per life-cycle stages A1-A3, A4-A5 and C1-C4, aggregated modules B1-B5 and B6-B7, and module D.

Excluded processes:
The following processes have been excluded:

- Manufacture of equipment used in production, buildings or any other capital goods.
- Transportation of personnel to the plant.
- Transportation of personnel within the plant.
- Research and development activities.
- Long-term emissions.

Data quality:
Data quality assessment is done according to the UN in its Global guidance principles for life cycle assessment databases, described in Annex E from EN 15804 standard. The assessment has covered the geographical (GeR), technological (TeR) and temporal (TiR) representativeness of the data. The data quality assessment complies with EN 15941 and cover more than 80% of the results for each of the declared environmental impact indicators. There is no fair, poor or very poor relevant data used contributing more than 30% in any impact indicator.

The scale of values used is from 1 to 5, where 1 is the lowest score and 5 is the highest, resulting in an average score in GeR of 3,97; in TeR of 4,11 and in TiR of 4,02, with a total data quality rating of 4,03, which indicates that the data quality is good.

ENVIRONMENTAL PERFORMANCE

LCA results of the product(s) - main environmental performance results

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.

The results of the end-of-life stage (modules C1-C4) should be considered when using the results of the product stage (modules A1-A3).

The following results are per declared unit.

Mandatory impact category indicators according to EN 15804

Results per declared unit																
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-fossil	kg CO_2 eq.	6,72E-01	1,61E-02	1,64E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,20E-04	4,57E-03	0,00E+00	2,83E-02	0,00E+00
GWP-biogenic	kg CO_2 eq.	-1,40E-02	3,22E-06	1,60E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,20E-08	8,72E-07	0,00E+00	4,72E-06	0,00E+00
GWP-luluc	kg CO_2 eq.	5,43E-04	6,15E-06	1,18E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,22E-08	1,51E-06	0,00E+00	1,85E-06	0,00E+00
GWP-total	kg CO_2 eq.	6,58E-01	1,61E-02	3,24E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,20E-04	4,57E-03	0,00E+00	2,84E-02	0,00E+00
ODP	kg CFC 11 eq.	2,60E-06	3,35E-10	5,20E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,78E-12	9,96E-11	0,00E+00	1,01E-10	0,00E+00
AP	mol H^+ eq.	5,24E-03	1,10E-04	1,11E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,07E-06	1,47E-05	0,00E+00	2,23E-05	0,00E+00
EP-freshwater	kg P eq.	2,90E-05	1,14E-07	5,91E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,18E-10	3,34E-08	0,00E+00	3,53E-08	0,00E+00
EP-marine	kg N eq.	6,31E-04	3,13E-05	1,69E-05	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,97E-07	4,88E-06	0,00E+00	8,62E-06	0,00E+00
EP-terrestrial	mol N eq.	6,59E-03	3,46E-04	1,53E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	5,45E-06	5,37E-05	0,00E+00	9,45E-05	0,00E+00
POCP	kg NMVOC eq.	3,13E-03	1,21E-04	7,11E-05	8,39E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,63E-06	2,22E-05	0,00E+00	4,01E-05	0,00E+00
ADP-minerals& metals*	kg Sb eq.	4,29E-06	4,12E-08	8,89E-08	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,27E-11	1,54E-08	0,00E+00	5,91E-09	0,00E+00
ADP-fossil*	MJ	1,08E+01	2,30E-01	2,33E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,56E-03	6,47E-02	0,00E+00	7,27E-02	0,00E+00
WDP*	m^3	5,19E-01	9,84E-04	1,12E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	3,33E-06	2,51E-04	0,00E+00	-2,97E-02	0,00E+00
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption															

** 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 experience with the indicator.*

Additional mandatory and voluntary impact category indicators

Results per declared unit																
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
GWP-GHG[1]	kg CO_2 eq.	6,74E-01	1,61E-02	1,73E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,20E-04	4,57E-03	0,00E+00	2,84E-02	0,00E+00

Resource use indicators

Results per declared unit																
Indicator	**Unit**	**A1-A3**	**A4**	**A5**	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**C1**	**C2**	**C3**	**C4**	**D**
PERE	MJ	8,21E-01	3,24E-03	2,65E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,54E-06	1,02E-03	0,00E+00	1,02E-03	0,00E+00
PERM	MJ	2,43E-01	0,00E+00	-2,43E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,06E+00	3,24E-03	2,20E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,54E-06	1,02E-03	0,00E+00	1,02E-03	0,00E+00
PENRE	MJ	4,48E+00	2,30E-01	9,67E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,56E-03	6,47E-02	0,00E+00	5,63E+00	0,00E+00
PENRM	MJ	6,30E+00	0,00E+00	-7,33E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-5,56E+00	0,00E+00
PENRT	MJ	1,08E+01	2,30E-01	2,33E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,56E-03	6,47E-02	0,00E+00	7,27E-02	0,00E+00
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m^3	1,27E-02	3,02E-05	2,73E-04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,10E-07	8,08E-06	0,00E+00	-6,91E-04	0,00E+00
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water															

[1] 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_2 is set to zero.

Waste indicators

Results per declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Hazardous waste disposed	kg	1,10E-04	1,49E-06	2,31E-06	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,08E-08	4,41E-07	0,00E+00	5,07E-07	0,00E+00
Non-hazardous waste disposed	kg	1,36E-01	1,75E-02	4,20E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,05E-06	3,10E-03	0,00E+00	3,00E-01	0,00E+00
Radioactive waste disposed	kg	1,93E-05	5,87E-08	4,03E-07	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,63E-10	1,90E-08	0,00E+00	1,95E-08	0,00E+00

Output flow indicators

Results per declared unit																
Indicator	Unit	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

Additional LCA results (other environmental performance results) of the product(s)

The variation between the representative product and all other products covered by the EPD is below 10% for all impact categories.

ABBREVIATIONS

Abbreviation	Definition
General Abbreviations	
EN	European Norm (Standard)
EPD	Environmental Product Declaration
EF	Environmental Footprint
GPI	General Programme Instructions
ISO	International Organization for Standardization
LCA	Life Cycle Assessment
PCR	Product Category Rules
c-PCR	Complementary Product Category Rules
CEN	European Committee for Standardization
CLC	Co-location centre
CPC	Central product classification
GHS	Globally harmonized system of classification and labelling of chemicals
GRI	Global Reporting Initiative
Environmental Impact Indicators (EN 15804)	
GHG	Greenhouse gas
GWP	Global Warming Potential (kg CO_2 eq.)
GWP-fossil	Global Warming Potential from fossil sources (kg CO_2 eq.)
GWP-biogenic	Global Warming Potential from biogenic sources (kg CO_2 eq.)
GWP-luluc	Global Warming Potential from land use and land use change (kg CO_2 eq.)
GWP-total	Total Global Warming Potential (kg CO_2 eq.)
GWP-GHG	Global Warming Potential for greenhouse gases (kg CO_2 eq.)
ODP	Ozone Depletion Potential (kg CFC-11 eq.)
AP	Acidification Potential (mol H^+ eq.)
EP	Eutrophication Potential
EP-freshwater	Freshwater eutrophication potential (kg P eq.)
EP-marine	Marine eutrophication potential (kg N eq.)
EP-terrestrial	Terrestrial eutrophication potential (mol N eq.)
POCP	Photochemical Ozone Creation Potential (kg NMVOC eq.)
ADP	Abiotic Depletion Potential
ADP-minerals&metals	Abiotic depletion potential for non-fossil resources (kg Sb eq.)
ADP-fossil	Abiotic depletion potential for fossil resources (MJ)
WDP	Water Deprivation Potential (m^3)
Resource Use Indicators	
PERE	Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ)
PERM	Use of renewable primary energy resources used as raw materials (MJ)
PERT	Total use of renewable primary energy resources (MJ)
PENRE	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ)
PENRM	Use of non-renewable primary energy resources used as raw materials (MJ)
PENRT	Total use of non-renewable primary energy resources (MJ)
SM	Use of secondary material (kg)
RSF	Use of renewable secondary fuels (MJ)
NRSF	Use of non-renewable secondary fuels (MJ)
FW	Use of net fresh water (m^3)
Waste Indicators	

HW	Hazardous Waste (disposed) (kg)
NHW	Non-Hazardous Waste (disposed) (kg)
RW	Radioactive Waste (disposed) (kg)
Output Flow Indicators	
CFR	Components for Reuse (kg)
MR	Material for Recycling (kg)
MER	Materials for Energy Recovery (kg)
EEE	Exported Energy, Electricity (MJ)
EET	Exported Energy, Thermal (MJ)
Lifecycle Stages / Modules	
A1	Raw material supply
A2	Transport
A3	Manufacturing
A4	Transport to site
A5	Construction/Installation
B1	Use
B2	Maintenance
B3	Repair
B4	Replacement
B5	Refurbishment
B6	Operational energy use
B7	Operational water use
C1	Deconstruction/Demolition
C2	Transport to waste processing
C3	Waste processing
C4	Disposal
D	Reuse-Recovery-Recycling potential
Other Relevant Terms	
SVHC	Substances of Very High Concern
EC No.	European Community Number
CAS No.	Chemical Abstracts Service Number
MJ	Megajoule
kg	Kilogram
m^3	Cubic Meter
NMVOC	Non-Methane Volatile Organic Compounds
Sb eq.	Antimony Equivalents
P eq.	Phosphorus Equivalents
N eq.	Nitrogen Equivalents
CFC-11 eq.	Chlorofluorocarbon-11 Equivalents
CO_2 eq.	Carbon Dioxide Equivalents
kg C	Kilograms of Carbon
kg CO_2 eq.	Kilograms of Carbon Dioxide Equivalent
ND	Not Declared

REFERENCES

- EN 15804:2012+A2:2019/AC:2021 - Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.
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- Ecoinvent Association. (2025). Ecoinvent Database v3.11. https://www.ecoinvent.org
- EPD International. General Program Instructions (GPI) for the International EPD System (version 5.0.1) www.environdec.com.
- The International EPD System PCR 2019:14 Construction products and Construction services. Version 2.0.1.
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VERSION HISTORY

Original Version of the EPD, 2026-09-25

EPD
INTERNATIONAL EPD SYSTEM
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