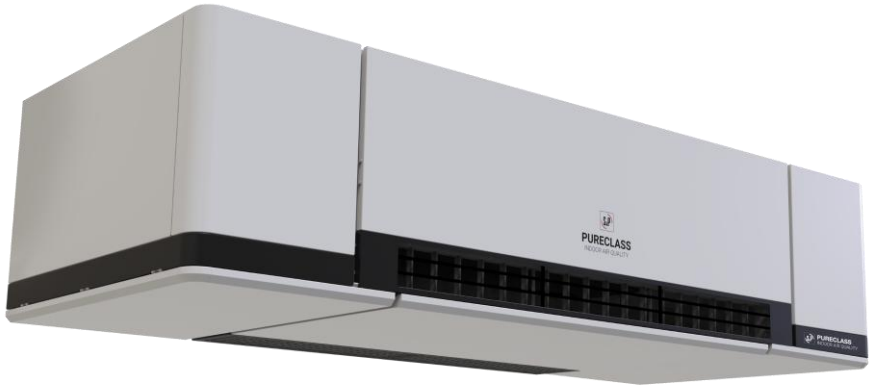
Environmental Product Declaration

In accordance with ISO 14025:2006, EN 15804:2012+A2:2019 / AC:2021
and c-PCR-018 Ventilation components
(Adopted from NPCR 030:2021) for:

DECENTRALIZED HEAT RECOVERY UNIT

PURECLASS 800 CL



EPD of multiple products, based on a representative product.
Products included:
All models of the PURECLASS 800 CL series.
The directly represented products in the EPD are:

PURECLASS 800 CL CO2 CP G4 F7

PURECLASS 800 CL PH DI CO2 CP G4 F7

*See annexes for the list of all included products.

From:

S&P Sistemas de Ventilación, S.L

Programme:	The International EPD® System, www.environdec.com
Programme operator:	EPD International AB
Type of EPD	EPD of multiple products, from a company
EPD registration number:	EPD-IES-0025462
Version date:	2025-09-24
Valid until:	2030-09-24

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.

ECO PLATFORM EPD VERIFIED

EPD® THE INTERNATIONAL EPD® SYSTEM

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
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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, version 2.0.1 published on 2025.06.05 and c-PCR-018 Ventilation components (Adopted from NPCR 030:2021).

PCR review was conducted by: The Technical Committee of the International EPD System. See www.environdec.com for a list of members. Review chair: Rob Rouwette (chair), Noa Meron (co-chair). The review panel may be contacted via the Secretariat www.environdec.com/contact

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: Elisabet Amat Guasch (Greenize Projects) (eamat@greenize.es)

Approved by: The 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:** S&P SISTEMAS DE VENTILACIÓN, SL.
- **Address:** Calle Llevant, 4 - Polígono Industrial Llevant; 08150 Parets del Vallès (Barcelona).
- **Contact and LCA practitioner**: Martí Roig Rabadà (mroig@solerpalau.com), Product Sustainability Manager.
- **Description of the organisation:** Committed to improving indoor air quality and making it accessible to everyone, S&P develops highly energy-efficient, reliable, and durable ventilation solutions that benefit both our customers and the planet. Easy installation is a key pillar of our innovation, ensuring our products meet the needs of both users and installers. We also prioritize human well-being, which is why we are dedicated to designing exceptionally quiet equipment.

- **Product-related or management system-related certifications:** ISO 9001 (ES-257/2001) and ISO 14001 (ES-2001/0052).

Soler&Palau Ventilation Group

Product information

- **Product name:** Decentralized heat recovery unit: PURECLASS 800 CL.
- **Product identification:** Decentralized heat recovery unit with high-efficiency counterflow heat exchanger (up to 92%) and low-consumption EC motors, designed to ensure continuous, balanced, and filtered ventilation.
- **UN CPC code:** Ventilation and air-conditioning equipment installation services (CPC 54632, version 2.1 dated 2015).
- **Product description:** The PURECLASS 800 CL ensures continuous, balanced ventilation by supplying fresh, filtered air while removing stale indoor air. Its compact, non-ducted design makes installation easy in schools, offices, hotels, and other buildings. With high-efficiency EC fans, advanced controls, and ISO-certified filters, the PURECLASS improves indoor air quality while maximizing energy efficiency.
- **Name and location of production site(s):** Electric motors are manufactured at one site of the S&P SISTEMAS DE VENTILACIÓN, S.L. group, located in the province of Girona. Final assembly is carried out at another site of the group, located in Madrid.
- **Included products:** This EPD covers multiple product configurations within the PURECLASS 800 CL range.

  The representative model, PURECLASS 800 CL CO_2 CP G4 F7, was selected due to its high sales volume.

  In addition, the “worst-case” configuration PURECLASS 800 CL PH DI CO_2 CP G4 F7 (that includes all optional components: CO_2 sensor, pump, and two electric batteries) has been analysed to report the highest environmental impact.

Content declaration

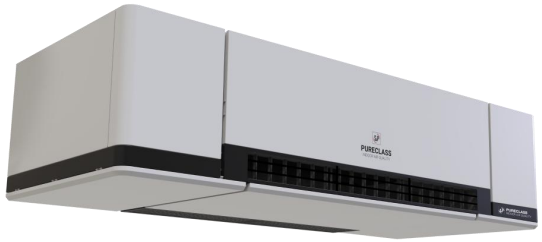
None of the components present in the final product and included in the “Candidate List of Substances of Extreme Concert in the authorization procedure” of the REACH regulation has a percentage higher than 0,1%.

The wooden pallet used for transport is assigned individually to each unit and is considered in a single-use cycle.

- **Product mass:** The mass of the products (including packaging) is listed below.

Product Case**	Product name	Mass (Kg)*
Ref. Product	PURECLASS 800 CL CO2 CP G4 F7 (with CO_2 sensor, condensate pump, without batteries)	239,76
Worst case	PURECLASS 800 CL PH DI CO2 CP G4 F7 (with CO_2 sensor, condensate pump and two electric batteries)	250,99

* Including packaging and pallet.
**The best-case configuration has not been reported, as its only difference from the reference product is the presence of the CO_2 sensor, which does not significantly change the results of the LCA.



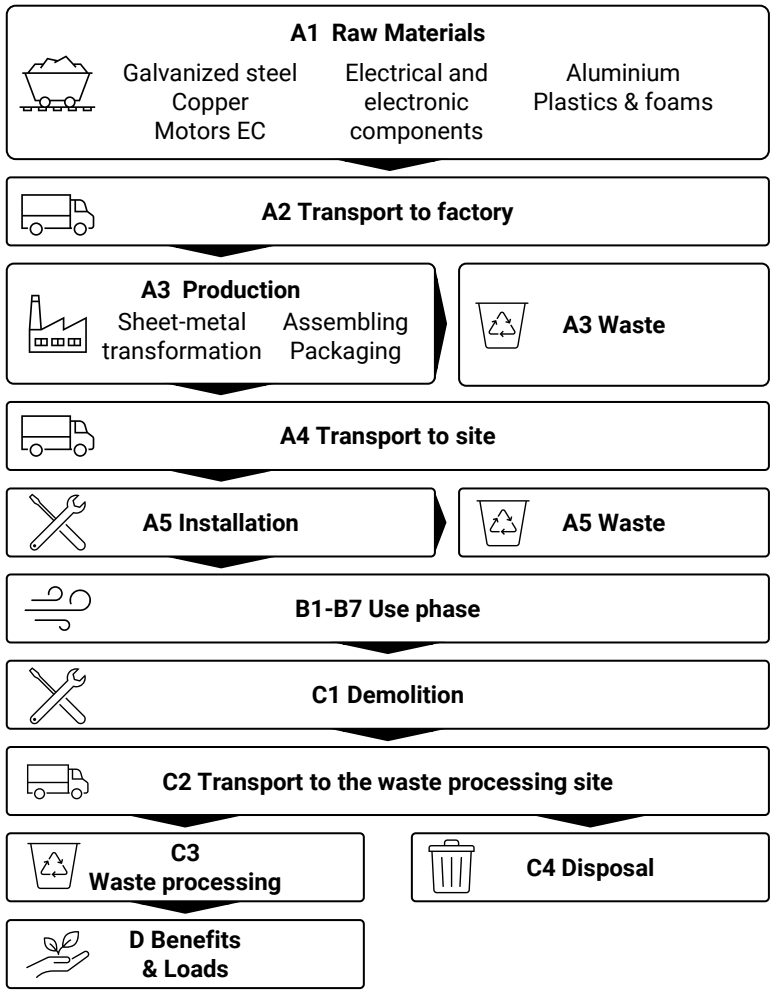
Product components	Reference Product Mass, kg	Worst case Product Mass, kg	Post-consumer material Mass - %	Biogenic material, Mass, kg C/kg
Steel	121,95	126,69	0,00%	-
Aluminium	26,43	27,09	0,27%	-
Copper	1,67	2,24	0,00%	-
Plastics	2,82	2,86	0,00%	-
Electrical and electronic components	3,65	8,86	0,00%	-
TOTAL	**156,52**	**167,74**	**0,27%**	-

Packaging materials	Reference Product Mass, kg	Worst case Product Mass, kg	Mass-% (versus the reference product)	Mass biogenic carbon, kg C/kg
Cardboard	6,85	6,85	4,00%	0,55
Wood	69,00	69,00	44,00%	0,45
Steel	7,40	7,40	5,00%	0,00
TOTAL	**83,25**	**83,25**	**53,00%**	**0,41**

LCA information

- **Declared unit:** 1 unit of PURECLASS 800 CL CO2 CP G4 F7.
- **Reference service life:** The product is maintained for 17 years. The period has been selected to seek present and future harmonization with other international environmental product declaration programs as for example PEP Ecopassport.
- **Technical service life:** 25 years.
- **Time representativeness:** All specific data related to the production plants and use, used for the study date from 2024.
- **Geographical scope:** The product is manufactured in Spain. LCA downstream scenario considered is Europe, however product can be used globally.
- **Database(s) and LCA software used:**
  - **Primary data**: Extracted directly from S&P's SAP system, organised by substructures. Each substructure includes a detailed Bill of Materials (BOM) with codified components (e.g., screws, electronics, cabling, galvanized sheet). Data were grouped by material families within each substructure (e.g., total galvanized steel, total aluminium).
  - **Secondary data**: Selected from Ecoinvent v3.10.1 (via OneClick LCA), prioritising datasets specific to Spain; when unavailable, representative European datasets were used.
- **EPD/LCA Tool used:** OneClick LCA.
- **Description of system boundaries:** Cradle to gate with options, modules A4-A5, modules B1-B7, modules C1–C4, and module D.

- **System diagram:**



- **Hypothesis and considerations applied:**

  PRODUCT STAGE (A1-A3): This stage covers the extraction and supply of raw materials, their transport to the production sites, and the manufacturing of the product.

  - **Raw materials supply (A1):** Includes all materials and semi-finished parts used in the unit. The EC motors are manufactured in-house and are modelled in A1 as primary data and enter A3 as finished subassemblies. Industrial processes associated with purchased materials (e.g., galvanizing, sheet metal rolling, etc.) are included.

    A conservative provision of approximately 10–15% is applied to account for production losses during the early stages.
  - **Transport (A2):** This stage accounts for the transport of all materials and pre-assembled components from suppliers to Madrid for final assembly. It has been modelled as road freight (16–32 t EURO 5), with one-way distances based on supplier locations.
  - **Manufacturing (A3):** The PURECLASS 800 CL is manufactured in three main steps:
    - Steel sheet transformation (cutting, punching, bending of galvanized steel).
    - Final assembly and testing, integrating motors, electronics, filters, and other semi-finished parts.
    - Packaging of the finished unit, using a wooden pallet and a cardboard lid per product.

    Electricity used during the manufacturing process is partially sourced from on-site solar panels (covering 25% of total consumption) and partially from the grid. The grid electricity is backed by a certificate of origin issued by the National Commission on Markets and Competition (CNMC), ensuring that it is 100% sourced from renewable energy — specifically, hydro power (covering 48% of total consumption) and wind power (covering 27% of total consumption). The final emission factor of the electricity mix used is 0,030 kg CO_{2eq}/kWh, already including transformer losses.

    Water consumption during manufacturing is negligible, since the plant relies on a closed-loop cooling system.

CONSTRUCTION PROCESS STAGE (A4-A5): The construction process stage covers both the transportation of the PURECLASS unit to the installation site (A4) and the installation activities at the site (A5).

- **Transportation to site (A4):** Transportation to the installation site is based on the 2024 sales distribution of PURECLASS units. Since all deliveries took place within Europe, transport has been modelled exclusively by lorry (16–32 metric tons, EURO 5) over an average distance of 1,100 km from the manufacturing plant in Madrid to the customer. Both the product weight (156,52 kg) and packaging weight (83,25 kg) have been considered, resulting in a transported mass of 239,76 kg per unit.
- **Installation (A5):** The installation process involves drilling, positioning, and anchoring the unit on the exterior wall. Energy is consumed by electrical tools and a forklift, and a limited amount of water is required for cooling during drilling. Additional auxiliary materials, such as ducts, grilles, and anchoring elements, are needed for proper installation. Packaging waste (wood, cardboard, and metals) and residues from drilling (concrete cores and slurry) are generated during this phase. Their treatment has been modelled using average European data for recycling, recovery, and disposal (EUROSTAT, 2023). The installation procedure follows the manufacturer's recommendations and has been documented in the official instructional video: PURECLASS installation video.

USE STAGE (B1- B7): Includes all impacts associated with the operation, maintenance, and repair of the product throughout its lifespan.

- **Use (B1):** This submodule is negligible, as the product does not generate additional impacts during its normal use.
- **Maintenance (B2):** Preventive maintenance consists of replacing the two air filters once per year. Over the 17-year service life, this represents a total of approximately 9,7 kg of filters replaced. New filters have been modelled using representative market datasets, including production and transport, while used filters have been modelled according to average European waste treatment scenarios. No other periodic maintenance activities are required.
- **Repair, Replacement, and Refurbishment (B3-B5):** These submodules are considered negligible, as no repairs, replacements or refurbishments are expected during the product's service life.
- **Operational Energy Use (B6):** The PURECLASS is an active product that consumes energy during use. Equipped with a CO_2 sensor, it regulates airflow according to CO_2 concentration.

  For the LCA, a constant representative operating point of 700 m³/h has been considered. At this point, the two EC fans together consume 0,44 kW. Considering operation in a medium-sized European school for 175 days per year, 7 hours per day, the annual energy consumption is 539 kWh, resulting in a total of 9.163 kWh over a 17-year service life.

  For the highest-impact configuration, the total energy consumption includes both the two EC fans and the two electric heaters. The heaters are assumed to operate only during the colder months, 40 days per year for 5 hours per day. Together with the batteries, which absorb 2.8 kW, the total annual electricity consumption amounts to 1,111.15 kWh. Electricity has been modelled using a European average low-voltage market dataset, with an emission factor of 0,33 kg CO_{2eq}/kWh.
- **Operational Water Use (B7):** This submodule is negligible, as the product does not require water for its operation.

END OF LIFE STAGE (C1-C4): The end-of-life stage includes all processes related to the deconstruction, transport, waste processing, and final disposal of the PURECLASS unit, together with the auxiliary installation elements (duct sleeves, grilles, dampers, and anchoring parts).

- **Deconstruction (C1):** Deconstruction impacts have been modelled according to the PCR, considering the default diesel consumption per tonne during dismantling. The total mass considered includes the equipment itself and the auxiliary installation materials.
- **Transport (C2):** A default transport distance of 80 km to recycling/landfill and 130 km to incineration facilities has been assumed, carried out by lorry (16–32 metric tons, EURO 5).

- **Waste processing and disposal (C3-C4):** Waste management has been modelled using a conservative and realistic scenario, although the recyclability potential of the equipment is higher than stated in the LCA. The percentages for recycling, incineration (with or without energy recovery), and landfill disposal have been defined based on EN 50693. For the entire product: 83% is recycled, 2% is incinerated (with or without energy recovery), and 16% is landfilled.

  Transport is assumed to be carried out using 16–32 t EURO 5 freight lorries in Europe.

  Additionally, as stated in the PCR, exclusive waste management scenarios (100% landfilled, 100% recycled, and 100% incinerated) have been included as Additional LCA results.

BENEFITS AND LOADS (D): Accounts for the potential environmental benefits and loads associated with the reuse, recycling, or energy recovery of materials after the product's end-of-life. These benefits are reported beyond the system boundaries.

- **Benefits and loads (D):** To ensure a realistic and evidence-based approach in modelling the impacts of Module D, data points generated by OneClick LCA and based on ECOINVENT data have been used. The quantities assigned to the different data points correspond only to waste that does not go to landfill.

Soler & Palau encourages the proper management of the equipment's waste and to increase the recyclability ratio at the end of its useful life, as the **product's recyclability potential is >96%.**

Material	End of Life Stage (C1-C4) Scenario	Benefits and Loads (D) Scenario
Steel	85% is recycled 15% is landfilled	Generation of steel scrap
Aluminium	90% is recycled 10% is landfilled	Generation of aluminium scrap
Copper	60% is recycled 40% is landfilled	Generation of copper scrap
PVC	34% is recycled 41% is incinerated with energy recovery 25% is landfilled	Generation of recycled PVC Energy recovery
ABS	20% is recycled 40% is incinerated with energy recovery 20% is incinerated without energy recovery 20% is landfilled	Generation of recycled ABS Energy recovery
Other Plastics	50% is incinerated with energy recovery 25% is incinerated without energy recovery 25% is landfilled	Energy recovery
Rubber	50% is incinerated with energy recovery 25% is incinerated without energy recovery 25% is landfilled	Energy recovery
Electric Components	100% is landfilled	-

- **Cut-off rules:** In accordance with the provisions of the PCR 2019:14 construction products, version 2.0.1 and the standard UNE-EN 15804:2012+A2:2020, at least 95% of total inflows and outflows (mass and energy) per module have been included. The "polluter pays" principle has been applied. Additionally, the following processes have been excluded from the study scope:
  - Manufacture of equipment used in production.
  - Business trips.
  - Maintenance activities at the production plants.
  - Transportation of personnel to and within the plants.
  - Diffuse particle emissions during the transport and storage of raw materials.

- **Data Quality Assessment:** All process-specific data was collected for the 2024 operating year and is therefore up to date.

  Manufacturing-related data is based on factory averages, and mass allocation factors have been applied.

  Primary data accounts for 17% of the overall dataset. The credibility and consistency of the collected data were verified using primary records; where these were unavailable, secondary sources were used.

  Dataset selection considered geographic relevance, prioritizing regional and country-specific data where available to best reflect actual operational locations. From a technical perspective, when specific data was not available, the most representative proxy datasets were used, selected based on technological equivalence and process similarity. The overall data quality is good.

Process	Source type	Source	Reference year	Data category	Share of primary data, of GWP-GHG results for A1-A3
Share of primary data, of GWP-GHG results for A1					**13,3%**
Raw materials	Database + Collected data	Ecoinvent v3.10 & EPD Owner	2024	Primary data and secondary data	14,3%
Share of primary data, of GWP-GHG results for A2					**1,9%**
Transport of raw materials to manufacturing site	Database + Collected data	Ecoinvent v3.10 & EPD Owner	2024	Primary data	100%
Share of primary data, of GWP-GHG results for A3					**0,3%**
Manufacturing of the product	Database + Collected data	Ecoinvent v3.10 & EPD Owner	2024	Primary data and secondary data	6,7%
Total share of primary data, of GWP-GHG results for A1-A3					**15,5%**

Modules Declared

The variation in GWP-GHG between the representative product (PURECLASS 800 CL CO2 CP G4 F7) and the product with the highest impact (PURECLASS 800 CL PH DI CO2 CP G4 F7) in stages A1–A3 is 10%, mainly due to an additional mass of approximately 11,2 kg associated with the heating batteries.

Module	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
	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 27	EU 27	ES	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27	EU 27
Share of primary data	15,5% (GWP-GHG)			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	9,9% (GWP-GHG)			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	0%			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Environmental performance

Mandatory impact category indicators according to EN 15804

A declared unit of one PURECLASS 800 CL CO2 CP G4 F7, with a mass of 239,76 kg (including packaging), is considered. The impact assessment is based on EF3.1. The estimated results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding thresholds, safety margins and/or risks. The results of the end-of-life stage (C1–C4) should be considered when using the results of the product stage (A1–A3). When comparing results from different Environmental Product Declarations (EPDs), exercise caution due to varying methodologies and uncertainties across programs.

		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 $CO_{2eq.}$	8,71E+02	5,10E+01	6,64E+01	0,00E+00	5,90E+01	0,00E+00	0,00E+00	0,00E+00	3,00E+03	0,00E+00	6,60E-02	2,59E+00	7,71E+00	2,36E+00	-1,37E+02
GWP-biogenic	Kg $CO_{2eq.}$	-1,42E+02	1,01E-02	1,42E+02	0,00E+00	2,73E-02	0,00E+00	0,00E+00	0,00E+00	6,73E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,16E-01
GWP-luluc	Kg $CO_{2eq.}$	6,58E+00	1,80E-02	4,53E-01	0,00E+00	1,34E-01	0,00E+00	0,00E+00	0,00E+00	9,21E+00	0,00E+00	6,76E-06	9,17E-04	4,27E-03	1,97E-04	-8,93E-03
GWP-total	Kg $CO_{2eq.}$	7,36E+02	5,10E+01	2,09E+02	0,00E+00	5,91E+01	0,00E+00	0,00E+00	0,00E+00	3,02E+03	0,00E+00	6,60E-02	2,60E+00	7,71E+00	2,36E+00	-1,37E+02
ODP	kg $CFC11_{eq.}$	1,08E-04	1,01E-06	7,22E-07	0,00E+00	8,44E-05	0,00E+00	0,00E+00	0,00E+00	5,53E-05	0,00E+00	1,01E-09	5,16E-08	4,47E-08	5,96E-09	-4,00E-07
AP	mol $H^{+}_{eq.}$	5,74E+00	1,59E-01	3,65E-01	0,00E+00	2,63E-01	0,00E+00	0,00E+00	0,00E+00	1,76E+01	0,00E+00	5,95E-04	8,07E-03	3,92E-02	1,84E-03	-7,25E-01
EP-freshwater	kg $P_{eq.}$	4,11E-01	3,38E-03	2,64E-02	0,00E+00	2,36E-02	0,00E+00	0,00E+00	0,00E+00	2,79E+00	0,00E+00	1,90E-06	1,72E-04	2,08E-03	2,93E-05	-2,37E-01
EP-marine	kg $N_{eq.}$	1,62E+00	5,38E-02	7,88E-02	0,00E+00	4,63E-02	0,00E+00	0,00E+00	0,00E+00	2,77E+00	0,00E+00	2,76E-04	2,71E-03	8,98E-03	2,55E-03	-1,47E-01
EP-terrestrial	mol $N_{eq.}$	1,14E+01	5,85E-01	6,77E-01	0,00E+00	4,55E-01	0,00E+00	0,00E+00	0,00E+00	2,48E+01	0,00E+00	3,02E-03	2,95E-02	9,98E-02	7,75E-03	-2,35E+00
POCP	kg $NMVOC_{eq.}$	3,30E+00	2,50E-01	2,42E-01	0,00E+00	1,79E-01	0,00E+00	0,00E+00	0,00E+00	8,16E+00	0,00E+00	9,02E-04	1,27E-02	2,93E-02	2,49E-03	-5,77E-01
ADP-minerals&metals*	kg $Sb_{eq.}$	6,89E-02	1,67E-04	2,93E-04	0,00E+00	4,44E-04	0,00E+00	0,00E+00	0,00E+00	4,05E-02	0,00E+00	2,37E-08	8,49E-06	2,21E-04	5,66E-07	-5,57E-03
ADP-fossil*	MJ	1,12E+04	7,16E+02	8,38E+02	0,00E+00	9,53E+02	0,00E+00	0,00E+00	0,00E+00	6,98E+04	0,00E+00	8,63E-01	3,64E+01	4,49E+01	4,92E+00	-1,15E+03
WDP*	m^3	6,47E+02	3,52E+00	4,15E+01	0,00E+00	1,91E+01	0,00E+00	0,00E+00	0,00E+00	1,90E+03	0,00E+00	2,16E-03	1,79E-01	1,30E+00	1,73E-01	1,47E+01

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.

* Disclaimer: 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

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 $CO_{2eq.}$	8,78E+02	5,10E+01	6,68E+01	0,00E+00	5,91E+01	0,00E+00	0,00E+00	0,00E+00	3,01E+03	0,00E+00	6,60E-02	2,60E+00	7,72E+00	2,37E+00	-1,37E+02
PM	Disease inc.	3,96E-05	4,01E-06	5,09E-06	0,00E+00	2,26E-06	0,00E+00	0,00E+00	0,00E+00	6,29E-05	0,00E+00	1,69E-08	2,04E-07	5,24E-07	3,20E-08	-1,11E-05
IRP (2)	kBq U-235_{eq}	9,95E+01	9,14E-01	6,68E+00	0,00E+00	1,29E+01	0,00E+00	0,00E+00	0,00E+00	1,93E+03	0,00E+00	3,82E-04	4,65E-02	3,35E-01	5,56E-03	7,01E-01
ETP-fw (3)	CTUe	7,15E+03	9,41E+01	2,48E+02	0,00E+00	1,77E+02	0,00E+00	0,00E+00	0,00E+00	1,06E+04	0,00E+00	4,75E-02	4,79E+00	4,40E+01	5,15E+02	-1,57E+03
HTP-c (3)	CTUh	8,07E-07	8,69E-09	6,98E-08	0,00E+00	1,44E-08	0,00E+00	0,00E+00	0,00E+00	1,01E-06	0,00E+00	6,78E-12	4,42E-10	3,23E-09	2,42E-10	5,57E-08
HTP-nc (3)	CTUh	1,74E-05	4,50E-07	8,71E-07	0,00E+00	6,48E-07	0,00E+00	0,00E+00	0,00E+00	5,26E-05	0,00E+00	1,07E-10	2,29E-08	2,04E-07	1,95E-08	9,36E-06
SQP (3)	Pt	1,13E+04	4,26E+02	2,50E+02	0,00E+00	1,13E+03	0,00E+00	0,00E+00	0,00E+00	1,55E+04	0,00E+00	6,05E-02	2,17E+01	8,22E+01	8,59E+00	-7,26E+02

Acronyms: **GWP-fossil = GWP-GHG**: Global warming potential-Greenhouse gas; **PM**= particulate matter; **IRP** =Ionizing radiation, human health; **ETP-fw**=Ecotoxicity tap water-organic; **HTP-c**= human health, carcinogenic effects; **HTP-nc**= human health , non-carcinogenic effects; **SQP** = Land use related impacts/ Soil quality.

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 CO2 is set to zero.

2)This impact category refers to the eventual impacts of low amounts of ionizing radiation on human health from the nuclear fuel cycle. It does not consider the effects due to possible nuclear accidents or occupational exposure due to possible nuclear accidents or occupational exposure due to radon or from some construction materials.

3)The results of this environmental impact category must be used wisely, as the uncertainties in the results are elevated and the results are elevated and the experience with this parameter is limited.

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	2,90E+03	1,24E+01	-9,63E+02	0,00E+00	3,07E+02	0,00E+00	0,00E+00	0,00E+00	1,91E+04	0,00E+00	5,47E-03	6,30E-01	7,88E+00	8,84E-02	-2,10E+02
PERM	MJ	1,06E+03	0,00E+00	-9,58E+02	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	3,95E+03	1,24E+01	-1,92E+03	0,00E+00	3,07E+02	0,00E+00	0,00E+00	0,00E+00	1,91E+04	0,00E+00	5,47E-03	6,30E-01	7,88E+00	8,84E-02	-2,10E+02
PENRE	MJ	1,12E+04	7,16E+02	8,32E+02	0,00E+00	9,53E+02	0,00E+00	0,00E+00	0,00E+00	6,98E+04	0,00E+00	8,63E-01	3,64E+01	-2,06E+01	-5,79E+01	-1,16E+03
PENRM	MJ	1,16E+02	0,00E+00	-4,63E+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	-3,18E+01	-3,41E+01	5,06E+00
PENRT	MJ	1,13E+04	7,16E+02	7,85E+02	0,00E+00	9,53E+02	0,00E+00	0,00E+00	0,00E+00	6,98E+04	0,00E+00	8,63E-01	3,64E+01	-5,24E+01	-9,20E+01	-1,15E+03
SM	kg	6,55E+01	3,28E-01	3,39E+00	0,00E+00	2,05E-01	0,00E+00	0,00E+00	0,00E+00	1,15E+01	0,00E+00	3,58E-04	1,67E-02	5,23E-02	1,71E-03	8,54E+01
RSF	MJ	3,32E+01	4,14E-03	1,40E-02	0,00E+00	2,83E-03	0,00E+00	0,00E+00	0,00E+00	9,21E-02	0,00E+00	9,37E-07	2,11E-04	2,48E-03	3,61E-05	-2,46E-02
NRSF	MJ	9,64E-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	0,00E+00	0,00E+00
FW	m^3	1,41E+02	9,64E-02	7,62E-01	0,00E+00	5,44E-01	0,00E+00	0,00E+00	0,00E+00	6,03E+01	0,00E+00	5,70E-05	4,91E-03	3,32E-02	-8,84E-03	-4,24E+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.

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	1,23E+02	1,03E+00	1,54E+01	0,00E+00	3,02E+00	0,00E+00	0,00E+00	0,00E+00	1,77E+02	0,00E+00	9,61E-04	5,23E-02	4,35E-01	5,02E-02	-7,67E+01
Non-hazardous waste disposed	kg	2,35E+03	2,17E+01	4,30E+02	0,00E+00	1,47E+02	0,00E+00	0,00E+00	0,00E+00	1,37E+04	0,00E+00	1,31E-02	1,10E+00	1,22E+01	2,13E+01	1,85E+03
Radioactive waste disposed	kg	2,22E+01	2,27E-04	1,71E-03	0,00E+00	3,26E-03	0,00E+00	0,00E+00	0,00E+00	4,95E-01	0,00E+00	9,38E-08	1,15E-05	8,53E-05	1,37E-06	1,48E-04

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	3,95E+01	0,00E+00	3,37E+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	1,37E+02	0,00E+00	0,00E+00
Materials for energy recovery	kg	1,54E-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	0,00E+00	0,00E+00
Exported energy, electricity	MJ	2,24E+00	0,00E+00	1,12E+02	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	2,02E+01	0,00E+00	0,00E+00
Exported energy, thermal	MJ	5,40E-01	0,00E+00	6,50E+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	1,17E+01	0,00E+00	0,00E+00

Additional LCA results

Variability analysis

The table below shows the variation in results between the declared reference product (PURECLASS 800 CL CO2 CP G4 F7) and the worst-case configuration (PURECLASS 800 CL PH DI CO_2 CP G4 F7). Percentage differences are presented for the combined impacts of modules A1–A3 and A–C. The additional impacts of the worst-case scenario are primarily due to the inclusion of batteries, which increase the mass of materials, associated manufacturing impacts, and contribute additional energy consumption. Over the full life cycle (A–C), module B6 remains the stage with the highest contribution to total impacts.

Variation (%) of Results per Declared Unit			
Indicator	**Unit**	**PURECLASS 800 CL PH DI CO_2 CP G4 F7**	
		A1-A3	**A-C**
GWP-fossil	Kg $CO_{2eq.}$	+9,9%	+81,0%
GWP-biogenic	Kg $CO_{2eq.}$	+0,4%	+5,0%
GWP-luluc	Kg $CO_{2eq.}$	+2,6%	+63,0%
GWP-total	Kg $CO_{2eq.}$	+12,0%	+81,0%
ODP	kg $CFC11_{eq.}$	+1,1%	+24,0%
AP	mol $H^{+}_{eq.}$	+40,0%	+97,0%
EP-freshwater	kg $P_{eq.}$	+14,0%	+106,0%
EP-marine	kg $N_{eq.}$	+7,5%	+70,0%
EP-terrestrial	mol $N_{eq.}$	+11,0%	+77,0%
POCP	kg $NMVOC_{eq.}$	+17,0%	+81,0%
ADP-minerals&metals*	kg $Sb_{eq.}$	+11,0%	+47,0%
ADP-fossil*	MJ	+9,4%	+90,0%
WDP*	m^3	+18,0%	+82,0%

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.

* EPD International Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

End of Life scenarios

Below, as indicated by the PCR, are the impacts associated with different waste management scenarios: 100% landfilling, 100% recycling, and 100% incineration. None of these scenarios is realistic, as the waste management of EEE equipment is typically carried out through a combination of methods, and some components cannot be feasibly recycled.

End of Life scenarios (Module C) results							
Indicator	Unit	100% Landfilled		100% Recycled		100% Incinerated	
		C3	C4	C3	C4	C3	C4
GWP-fossil	Kg $CO_{2eq.}$	0,00E+00	9,81E+01	3,98E+00	0,00E+00	2,08E+01	0,00E+00
GWP-biogenic	Kg $CO_{2eq.}$	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
GWP-luluc	Kg $CO_{2eq.}$	0,00E+00	1,05E-02	5,06E-03	0,00E+00	1,58E-03	0,00E+00
GWP-total	Kg $CO_{2eq.}$	0,00E+00	9,81E+01	3,87E+00	0,00E+00	2,08E+01	0,00E+00
ODP	kg $CFC11_{eq.}$	0,00E+00	1,51E-06	5,10E-08	0,00E+00	7,11E-08	0,00E+00
AP	mol $H^{+}_{eq.}$	0,00E+00	8,74E-01	4,46E-02	0,00E+00	2,28E-02	0,00E+00
EP-freshwater	kg $P_{eq.}$	0,00E+00	3,01E-03	2,47E-03	0,00E+00	1,83E-03	0,00E+00
EP-marine	kg $N_{eq.}$	0,00E+00	4,25E-01	1,01E-02	0,00E+00	9,87E-03	0,00E+00
EP-terrestrial	mol $N_{eq.}$	0,00E+00	4,43E+00	1,12E-01	0,00E+00	1,01E-01	0,00E+00
POCP	kg NMVOC $_{eq.}$	0,00E+00	1,32E-00	3,31E-02	0,00E+00	3,18E-02	0,00E+00
ADP-minerals&metals*	kg $Sb_{eq.}$	0,00E+00	3,74E-05	2,59E-04	0,00E+00	1,00E-05	0,00E+00
ADP-fossil*	MJ	0,00E+00	1,29E+03	5,20E+01	0,00E+00	5,38E+01	0,00E+00
WDP*	m^3	0,00E+00	3,50E+00	9,74E-01	0,00E+00	1,27E+01	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.

* Disclaimer: 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

Geographical variability analysis

Below are the impacts of the PURECLASS 800 CL CO2 CP G4 F7 module B6 when the product operates under the defined scenario across various countries and geographies. The dataset used corresponds to low-voltage electricity (market activity).

Results per declared unit - B6								
Indicator	**Unit**	**SPAIN**	**FRANCE**	**GERMANY**	**BELGIUM**	**NORWAY**	**ITALY**	**GREAT BRITAIN**
GWP-fossil	Kg $CO_{2eq.}$	1,87E+03	8,00E+02	3,57E+03	1,87E+03	2,19E+02	3,24E+03	2,38E+03
GWP-biogenic	Kg $CO_{2eq.}$	4,66E+00	1,43E+00	1,80E+01	2,75E+00	3,80E+00	1,33E+01	1,39E+00
GWP-luluc	Kg $CO_{2eq.}$	2,46E+01	7,99E-01	7,34E+00	5,03E+00	1,02E+00	7,00E-01	2,96E+00
GWP-total	Kg $CO_{2eq.}$	1,91E+03	8,05E+02	3,60E+03	1,89E+03	2,25E+02	3,25E+03	2,39E+03
ODP	kg $CFC11_{eq.}$	3,83E-05	2,83E-05	4,59E-05	8,02E-05	5,92E-06	7,47E-05	1,21E-04
AP	mol $H^{+}_{eq.}$	1,03E+01	5,58E+00	1,03E+01	5,97E+00	3,03E+00	1,37E+01	8,83E+00
EP-freshwater	kg $P_{eq.}$	4,45E-01	3,34E-01	4,88E+00	4,15E-01	2,31E-01	7,23E-01	4,28E-01
EP-marine	kg $N_{eq.}$	1,84E+00	1,06E+00	2,65E+00	1,24E+00	2,64E-01	2,04E+00	1,92E+00
EP-terrestrial	mol $N_{eq.}$	1,93E+01	8,81E+00	1,96E+01	1,27E+01	3,21E+00	2,22E+01	2,21E+01
POCP	kg $NMVOC_{eq.}$	6,93E+00	3,02E+00	6,31E+00	4,03E+00	9,78E-01	9,52E+00	6,19E+00
ADP-minerals&metals*	kg $Sb_{eq.}$	4,08E-02	3,84E-02	4,54E-02	4,31E-02	3,48E-02	4,07E-02	4,03E-02
ADP-fossil*	MJ	6,18E+04	1,04E+05	5,58E+04	7,42E+04	2,65E+03	5,19E+04	6,47E+04
WDP*	m^3	1,22E+03	1,31E+03	9,27E+02	8,73E+02	1,15E+04	1,99E+03	6,37E+02

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.

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Annexes

Products included in the EPD

This EPD includes the entire PURECLASS 800 CL product range. The following products are included in the scope of this EPD.

Product Name	Attributes
PURECLASS 800 CL CP G4 F7	With condensation pump.
PURECLASS 800 CL CO_2 G4 F7	With CO_2 sensor.
PURECLASS 800 CL CO_2 CP G4 F7 (Ref. Case)	With CO_2 sensor and condensation pump.
PURECLASS 800 CL PH CP G4 F7	With electric pre-heater and condensation pump.
PURECLASS 800 CL PH CO_2 CP G4 F7	With CO_2 sensor, electric pre-heater, and condensation pump.
PURECLASS 800 CL DI CP G4 F7	With electric post-heater and condensation pump.
PURECLASS 800 CL DI CO_2 CP G4 F7	With CO_2 sensor, electric post-heater, and condensation pump.
PURECLASS 800 CL DC CO_2 CP G4 F7	With CO_2 sensor, water post-heater, and condensation pump.
PURECLASS 800 CL PH DI G4 F7	With electric pre-heater and electric post-heater.
PURECLASS 800 CL PH DI CP G4 F7	With electric pre-heater, electric post-heater, and condensation pump.
PURECLASS 800 CL PH DI CO_2 CP G4 F7 (Worst Case)	With CO_2 sensor, electric pre-heater, electric post-heater, and condensation pump.

Abbreviations

All abbreviations used in the EPD are described below:

Abbreviation	Definition
CEN	European Committee for Standardization
CLC	Co-location Centre
CNMC	Comisión Nacional de los Mercados y la Competencia
CPC	Central Product Classification
EEE	Electrical and Electronic Equipment
EF	Environmental Footprint
EN	European Norm (Standard)
EPD	Environmental Product Declaration
GPI	General Programme Instructions
ISO	International Organization for Standardization
LCA	Life-Cycle Assessment
NPCR	National Product Category Rules
PCR	Product Category Rules
PEP	Product Environmental Profile
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals

References

1. PCR 2019:14. Construction products. Version 2.0.1. Valid until 07/04/2030.
2. c-PCR-018 Ventilation components (Adopted from NPCR 030:2021).
3. ISO 14025:2010: Environmental labels and declarations-Type III Environmental Declarations-Principles and procedures.
4. ISO 14040: Environmental management-Life Cycle Assessment-Principles and framework (2006).
5. ISO 14044: Environmental management-Life Cycle Assessment-Requirements and guidelines (2006).
6. EN 15804:2012+A2:2019/AC:2021: Sustainability of construction works - Environmental product declarations - Core rules for the product category of construction products.
7. General Programme Instructions for international EPD System version 5.0.0 (2024-06-19).
8. LCA Report Memoria DECENTRALIZED HEAT RECOVERY SYSTEM: PURECLASS 800 CL.
9. Product Environmental Footprint report. Representative product study for: Unidirectional Residential Ventilation Units (URVU), Bidirectional Residential Ventilation Units (BRVU), Non-residential Ventilation Units (NRVU), Fans (>125W); EVIA.
10. Packaging waste by waste management operations; EUROSTAT; 2023.
11. EN 50693:2020 - Product category rules for life cycle assessments of electronic and electrical products and systems

Version History

1. Original Version of the EPD, 2025-09-24.

Soler&Palau Ventilation Group

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